

LITTELL'S LIVING AGE.

Fifth Series, }
Volume XVI. }

No. 1696. — December 16, 1876.

{ From Beginning,
Vol. CXXXI.

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PUBLISHED EVERY SATURDAY BY
LITTELL & GAY, BOSTON.

TERMS OF SUBSCRIPTION.

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THE NIGHT COMETH.

COMETH the night wherein no man may labor,
Therefore we work while yet the day is light;
To thee, to me, to foeman, friend and neighbor
Cometh the night—the night.

Toil on—toil on, nor dally with the morning,
Sweet syren couching in a thousand snares,
Faithless she flies—scanty and brief her
warning—
Leaving thee unawares.

Then am'rous breath of noon will tempt to
pleasure,
And ease and rest, until the heat be past;—
Arise, and work! We have no time for
leisure
Whose sky is overcast.

Aye, overcast. Tho' morn be sweet and
pleasant,
And later noon shall offer fresh delight,
He surely sees, who looks beyond the present,
The shadow of the night.

Terrible night to those with task half ended,
Who revel careless thro' the rosy hours;
Leaving the corn, the goodly corn, untended,
To gather in the flows:

Which close, or droop, or die when eve ad-
vances,
And lo, the sorry harvest withered lies;
And phantoms of lost hope, lost time, lost
chances
Out of the gloom arise.

Not so comes night to all. Sweet sleep will
strengthen
Toilers with burden of the day oppress;
To whom the evening shadows, while they
lengthen,
Bring peace, and hard-won rest.

Oh, welcome rest for weary hearts and aching,
And wounded feet all travel-stained and sore;
Welcome the rest,—thrice welcome the awak-
ing,
Never to need it more.

Work then, nor fear the struggle and the
labor;
For tho', maybe, the day yet seemeth bright,
To thee, to me, to foeman, friend and neighbor
Cometh the night—the night.

Argosy.

S. E. G.

PSALM CXLVIII.

This versification of the one hundred and forty-eighth
psalm was written for the *New York Evening Post*
for Thanksgiving.

PRaise ye the Lord in heaven above
Ye angels who around him move,
Ye glorious band of satellites
Who people his eternal heights.

Ye first creations of his hand
Who sprang to life at his command,
A life that by his firm decree
Shall lengthen to eternity.

Ye sun and moon and stars of light,
The bright reflectors of his sight,
Ye waters from his throne that spring,
Praise ye the name of Zion's King!

Praise him, O earth, in hills and deeps!
Praise him who all thy creatures keeps,
Ye elements his praise declare,
Ye who his earthly cohorts are.

Mountains and hills and fruitful trees,
And cedars waving in the breeze,
Cattle and beasts and creeping things,
And birds that spread their snowy wings,

Princes who earthly sceptres sway,
All people who their rule obey,
And ye who give the world its law,
Of your Creator stand in awe.

Let all mankind, the young, the old,
Praise him for mercies still untold;
Let all his mighty sceptre own,
Whose name is excellent alone.

Above our faint conceptions far,
Higher than heaven's remotest star,
Bow down thine ear, Eternal King,
Accept the offering we bring!

TWO SONGS.

[FROM THE GERMAN OF HEINE.]

I MURMUR not. When heart-break is my lot,
O love forever lost! I murmur not.
Though diamond-radiance clothes thy form in
light,
There falls no ray upon thy heart's black night.
That knew I long. I saw thee in a dream,
And saw the darkness through thy bosom
stream,
And saw the worm which feeds upon thy heart;
And saw, my love, how sorrowful thou art.

YES, thou art wretched, and I murmur not;—
My love, we shall be wretched, thou and I!
Till of each aching heart death breaks the
knot,
My love, we shall be wretched, thou and I.
Upon thy mouth, scorn its light traces leaves,
I see thine eyes flash out defiantly,
I see the pride with which thy bosom heaves,—
Yet, wretched art thou, love, wretched as I.
Unseen the smart about thy mouth's unrest,
Concealed the tears which dim thy lucent
eyne,
Secret the pain which wrings thy haughty
breast,—
Perennial anguish, love, is mine and thine.

Spectator.

From The Fortnightly Review.
**FERMENTATION, AND ITS BEARINGS ON
 THE PHENOMENA OF DISEASE.***

ONE of the most remarkable characteristics of the age in which we live, is its desire and tendency to connect itself organically with preceding ages—to ascertain how the state of things that now is came to be what it is. And the more earnestly and profoundly this problem is studied, the more clearly comes into view the vast and varied debt which the world of to-day owes to that fore-world, in which man by skill, valor, and well-directed strength first replenished and subdued the earth. Our pre-historic fathers may have been savages, but they were clever and observant ones. They founded agriculture by the discovery and development of seeds whose origin is now unknown. They tamed and harnessed their animal antagonists, and sent them down to us as ministers, instead of rivals in the fight for life. Later on, when the claims of luxury added themselves to those of necessity, we find the same spirit of invention at work. We have no historic account of the first brewer, but we glean from history that his art was practised, and its produce relished, more than two thousand years ago. Theophrastus, who was born nearly four hundred years before Christ, described beer as *the wine of barley*. It is extremely difficult to preserve beer in a hot country, still, Egypt was the land in which it was first brewed, the desire of man to quench his thirst with this exhilarating beverage overcoming all the obstacles which a hot climate threw in the way of its manufacture.

Our remote ancestors had also learned by experience that wine maketh glad the heart of man. Noah, we are informed, planted a vineyard, drank of the wine, and experienced the consequences. But, though wine and beer possess so old a history, a very few years ago no man knew the secret of their formation. Indeed, it might be said that until the present year no thorough and scientific account was ever given of the agencies which come into play in the manufacture of beer, of the

conditions necessary to its health, and of the maladies and vicissitudes to which it is subject. Hitherto the art and practice of the brewer have resembled those of the physician, both being founded on empirical observation. By this is meant the observation of facts apart from the principles which explain them, and which give the mind an intelligent mastery over them. The brewer learnt from long experience the conditions, not the reasons of success. But he had to contend, and he has still to contend, against unexplained perplexities. Over and over again his care has been rendered nugatory; his beer has fallen into acidity or rottenness, and disastrous losses have been sustained, of which he has been unable to assign the cause. It is the hidden enemies against which the physician and the brewer have hitherto contended, that recent researches are dragging into the light of day, thus preparing the way for their final extermination.

Let us glance for a moment at the outward and visible signs of fermentation. A few weeks ago I paid a visit to a private still in a Swiss chalet; and this is what I saw. In the peasant's bedroom was a cask with a very large bung-hole carefully closed. The cask contained cherries which had lain in it for fourteen days. It was not entirely filled with the fruit, an air-space being left above the cherries when they were put in. I had the bung removed, and a small lamp dipped into this space. Its flame was instantly extinguished. The oxygen of the air had entirely disappeared, its place being taken by carbonic acid gas.* I tasted the cherries: they were very sour, though when put into the cask they were sweet. The cherries and the liquid associated with them were then placed in a copper boiler, to which a copper head was closely fitted. From the head proceeded a copper tube which passed straight through a vessel of cold water, and issued at the other side. Under the open end of the tube was placed a bottle to receive the spirit distilled. The

* The gas which is exhaled from the lungs after the oxygen of the air has done its duty in purifying the blood, the same also which effervesces from soda water and champagne.

* A discourse delivered before the Glasgow Science Lectures Association, October 19th, 1876.

flame of small wood-splinters being applied to the boiler, after a time vapor rose into the head, passed through the tube, was condensed by the cold of the water, and fell in a liquid fillet into the bottle. On being tasted, it proved to be that fiery and intoxicating spirit known in commerce as *Kirsch* or *Kirschwasser*.

The cherries, it should be remembered, were here left to themselves, no ferment of any kind being added to them. In this respect what has been said of the cherry applies also to the grape. At the vintage the fruit of the vine is placed in proper vessels and abandoned to its own action. It ferments, producing carbonic acid; its sweetness disappears, and at the end of a certain time the unintoxicating grape-juice is converted into intoxicating wine. Here, as in the case of the cherries, the fermentation is spontaneous—in what sense spontaneous will appear more clearly by-and-by.

It is needless for me to tell a Glasgow audience that the beer-brewer does not set to work in this way. In the first place the brewer deals not with the juice of fruits, but with the juice of barley. The barley having been steeped for a sufficient time in water, it is drained, and subjected to a temperature sufficient to cause the moist grain to germinate; after which it is completely dried upon a kiln. It then receives the name of malt. The malt is crisp to the teeth, and decidedly sweeter to the taste than the original barley. It is ground, mashed up in warm water, then boiled with hops until all the soluble portions have been extracted; the infusion thus produced being called the *wort*. This is drawn off, and cooled as rapidly as possible; then, instead of abandoning the infusion, as the wine-maker does, to its own action, the brewer mixes yeast with his wort, and places it in vessels each with only one aperture open to the air. Soon after the addition of the yeast, a brownish froth, which is really new yeast, issues from the aperture, and falls like a cataract into troughs prepared to receive it. This frothing and foaming of the wort is a proof that the fermentation is active.

Whence comes the yeast which issues so copiously from the fermenting-tub?

What is this yeast, and how did the brewer become in the first instance possessed of it? Examine its quantity before and after fermentation. The brewer introduces, say 10 cwt. of yeast; he collects forty, or it may be 50 cwt. The yeast has, therefore, augmented from four to five fold during the fermentation. Shall we conclude that this additional yeast has been spontaneously generated by the wort? Are we not rather reminded of that seed which fell into good ground, and brought forth fruit, some thirtyfold, some sixtyfold, some an hundredfold? On examination this notion of organic growth turns out to be more than a mere surmise. In the year 1680, when the microscope was still in its infancy, Leeuwenhoek turned the instrument upon this substance, and found it composed of minute globules suspended in a liquid. Thus knowledge rested until 1835, when Cagniard de la Tour in France, and Schwann in Germany, independently, but animated by a common thought, turned microscopes of improved definition and heightened powers upon yeast, and found it budding and sprouting before their eyes. The augmentation of the yeast alluded to above was thus proved to arise from the growth of a minute plant, now called *Torula* (or *Saccharomyces*) *Cerevisia*. Spontaneous generation is therefore out of the question. The brewer deliberately sows the yeast-plant, which grows and multiplies in the wort as its proper soil. This discovery marks an epoch in the history of fermentation.

But where did the brewer find his yeast? The reply to this question is similar to that which must be given if it were asked where the brewer found his barley. He has received the seeds of both of them from preceding generations. Could we connect without solution of continuity the present with the past, we should probably be able to trace back the yeast employed by my friend Sir Fowell Buxton to-day, to that employed by some Egyptian brewer two thousand years ago. But you may urge that there must have been a time when the first yeast-cell was generated. Granted—exactly as there was a time when the first barleycorn was generated. Let not the delusion lay hold of you, that

a living thing is easily generated, because it is small. Both the yeast-plant and the barley-plant lose themselves in the dim twilight of antiquity, and in this our-day there is no more proof of the spontaneous generation of the one, than there is of the spontaneous generation of the other.

I stated a moment ago that the fermentation of grape-juice was spontaneous; but I was careful to add, "in what sense spontaneous will appear more clearly by-and-by." Now this is the sense meant. The wine-maker does not, like the brewer and distiller, deliberately introduce either yeast, or any equivalent of yeast, into his vats; he does not consciously sow in them any plant, or the germ of any plant; indeed he has been hitherto in ignorance whether plants or germs of any kind have had anything to do with his operations. Still, when the fermented grape-juice is examined, the living *Torula* concerned in alcoholic fermentation never fails to make its appearance. How is this? If no living germ has been introduced into the wine-vat, whence comes the life so invariably developed there?

You may be disposed to reply with Turpin and others, that in virtue of its own inherent powers, the grape-juice when brought into contact with the vivifying atmospheric oxygen, runs spontaneously and of its own accord into these low forms of life. I have not the slightest objection to this explanation provided proper evidence can be adduced in support of it. But the evidence adduced in its favor, as far as I am acquainted with it, snaps asunder under the least strain of scientific criticism. It is, as far as I can see, the evidence of men, who, however keen and clever as *observers*, are not rightly trained *experimenters*. These alone are aware of the precautions necessary in investigations of this delicate kind. In reference, then, to the life of the wine-vat, what is the decision of experiment when carried out by competent men? Let a quantity of the clear, filtered "must" of the grape be so boiled-as to destroy such germs as it may have contracted from the air or otherwise. In contact with germless air the uncontaminated must never ferments. All the materials for spontaneous generation are

there, but so long as there is no seed sown there is no life developed, and no sign of that fermentation which is the concomitant of life. Nor need you resort to a boiled liquid. The grape is sealed by its own skin against contamination from without. By an ingenious device Pasteur has extracted from the interior of the grape its pure juice, and proved that in contact with pure air it never acquires the power to ferment itself, nor to produce fermentation in other liquids.* It is not, therefore, in the interior of the grape that the origin of the life observed in the vat is to be sought.

What, then, is its true origin? This is Pasteur's answer, which his well-proved accuracy renders worthy of all confidence. At the time of the vintage microscopic particles are observed adherent, both to the outer surface of the grape and of the twigs which support the grape. Brush these particles into a capsule of pure water. It is rendered turbid by the dust. Examined by a microscope some of these minute particles are seen to present the appearance of organized cells. Instead of receiving them in water, let them be brushed into the pure inert juice of the grape. Forty-eight hours after this is done, our familiar *Torula* is observed budding and sprouting, the growth of the plant being accompanied by all the other signs of active fermentation. What is the inference to be drawn from this experiment? Obviously that the particles adherent to the external surface of the grape include the germs of that life which, after they have been sown in the juice, appears in such profusion. Wine is sometimes objected to on the ground that fermentation is "artificial;" but we notice here the responsibility of nature. The ferment of the grape clings like a parasite to the surface of the grape, and the art of the wine-maker from time immemorial has consisted in bringing—and it may be added, ignorantly bringing—two things thus closely associated by nature into actual contact with each other. For thousands of years,

* The liquids of the healthy animal body are also sealed from external contamination. Pure blood, for example, drawn with due precautions from the veins, will never ferment or putrefy in contact with pure air.

what has been done consciously by the brewer, has been done unconsciously by the wine-grower. The one has sown his leaven just as much as the other.

Nor is it necessary to impregnate the beer-wort with yeast to provoke fermentation. Abandoned to the contact of our common air, it sooner or later ferments; but the chances are that the produce of that fermentation, instead of being agreeable, would be disgusting to the taste. By a rare accident we might get the true alcoholic fermentation, but the odds against obtaining it would be enormous. Pure air acting upon a lifeless liquid will never provoke fermentation; but our ordinary air is the vehicle of numberless germs, which act as ferments when they fall into appropriate infusions. Some of them produce acidity, some putrefaction. The germs of our yeast-plant are also in the air; but so sparingly distributed that an infusion like beer-wort, exposed to the air, is almost sure to be taken possession of by foreign organisms. In fact, the maladies of beer are wholly due to the admixture of these objectionable ferments, whose forms and modes of nutrition differ materially from those of the true leaven.

Working in an atmosphere charged with the germs of these organisms, you can understand how easy it is to fall into error in studying the action of any one of them. Indeed, it is only the most accomplished experimenter, who, moreover, avails himself of every means of checking his conclusions, that can walk without tripping through this land of pitfalls. Such a man is the French chemist Pasteur. He has taught us how to separate the commingled ferments of our air, and to study their pure individual action. Guided by him, let us fix our attention more particularly upon the growth and action of the true yeast-plant under different conditions. Let it be sown in a fermentable liquid, which is supplied with plenty of pure air. The plant will flourish in the aerated infusion, and produce large quantities of carbonic acid gas—a compound, as you know, of carbon and oxygen. The oxygen thus consumed by the plant is the free oxygen of the air, which we suppose to be abundantly supplied to the liquid. The action is so far similar to the respiration of animals, which inspire oxygen and expire carbonic acid. If we examine the liquid even when the vigor of the plant has reached its maximum, we hardly find in it a trace of alcohol. The yeast has grown and flourished, but it has almost ceased to act as a ferment. And could every individual yeast-cell seize,

without any impediment, free oxygen from the surrounding liquid, it is certain that it would cease to act as a ferment altogether.

What, then, are the conditions under which the yeast-plant must be placed so that it may display its characteristic quality? Reflection on the facts already referred to suggests a reply, and rigid experiment confirms the suggestion. Consider the Alpine cherries in their closed vessel. Consider the beer in its barrel, with a single small aperture open to the air, through which it is observed not to imbibe oxygen, but to pour forth carbonic acid. Whence come the volumes of oxygen necessary to the production of this latter gas? The small quantity of atmospheric air dissolved in the wort and overlying it would be totally incompetent to supply the necessary oxygen. In no other way can the yeast-plant obtain the gas necessary for its respiration than by wrenching it from surrounding substances, in which the oxygen exists, not free, but in a state of combination. It decomposes the sugar of the solution in which it grows, produces heat, breathes forth carbonic acid gas, and one of the liquid products of the decomposition is our familiar alcohol. The act of fermentation, then, is a result of the effort of the little plant to maintain its respiration by means of combined oxygen, when its supply of free oxygen is cut off. As defined by Pasteur, fermentation is *life without air*.

But here the knowledge of that thorough investigator comes to our aid to warn us against errors which have been committed over and over again. It is not all yeast-cells that can thus live without air and provoke fermentation. They must be young cells which have caught their vegetative vigor from contact with free oxygen. But once possessed of this vigor the yeast may be transplanted into a saccharine infusion absolutely purged of air, where it will continue to live at the expense of the oxygen, carbon, and other constituents of the infusion. Under these new conditions its life, *as a plant*, will be by no means so vigorous as when it had a supply of free oxygen, but its action *as a ferment* will be indefinitely greater.

Does the yeast-plant stand alone in its power of provoking alcoholic fermentation? It would be singular if amid the multitude of low vegetable forms no other could be found capable of acting in a similar way. And here again we have occasion to marvel at that sagacity of observation among the ancients to which we owe so vast a debt. Not only did they discover

the alcoholic ferment of yeast, but they had to exercise a wise selection in picking it out from others, and giving it special prominence. Place an old boot in a moist place, or expose common paste or a pot of jam to the air; it soon becomes coated with a blue-green mould, which is nothing else than the fructification of a little plant called *Penicillium glaucum*. Do not imagine that the mould has sprung spontaneously from boot, or paste, or jam; its germs, which are abundant in the air, have been sown, and have germinated, in as legal and legitimate a way as thistle-seeds wafted by the wind to a proper soil. Let the minute spores of *Penicillium* be sown in a fermentable liquid, which has been previously so boiled as to kill all other spores or seeds which it may contain; let pure air have free access to the mixture; the *Penicillium* will grow rapidly, striking long filaments into the liquid, and fructifying at its surface. Test the infusion at various stages of the plant's growth, you will never find in it a trace of alcohol. But forcibly submerge the little plant, push it down deep into the liquid, where the quantity of free oxygen that can reach it is insufficient for its needs, it immediately begins to act as a ferment, supplying itself with oxygen by the decomposition of the sugar, and producing alcohol as one of the results of the decomposition. Many other low microscopic plants act in a similar manner. In aerated liquids they flourish without any production of alcohol, but cut off from free oxygen they act as ferments, producing alcohol exactly as the real alcoholic leaven produces it, only less copiously. For the right apprehension of all these facts we are indebted to Pasteur.

In the cases hitherto considered, the fermentation is proved to be the invariable correlative of *life*, being produced by organisms foreign to the fermentable substance. But the substance itself may also have within it, to some extent, the motive power of fermentation. The yeast-plant, as we have learned, is an assemblage of living cells; but so at bottom, as shown by Schleiden and Schwann, are all living organisms. Cherries, apples, peaches, pears, plums, and grapes, for example, are composed of cells, each of which is a living unit. And here I have to direct your attention to a point of extreme interest. In 1821, the celebrated French chemist, Bérard, established the important fact that all ripening fruit, exposed to the free atmosphere, absorbed the oxygen of the atmosphere and liberated an approximately equal volume of car-

bonic acid. He also found that when ripe fruits were placed in a confined atmosphere, the oxygen of the atmosphere was first absorbed, and an equal volume of carbonic acid given out. But the process did not end here. After the oxygen had vanished, carbonic acid, in considerable quantities, continued to be exhaled by the fruits, which at the same time lost a portion of their sugar, becoming more acid to the taste, though the absolute quantity of acid was not augmented. This was an observation of capital importance, and Bérard had the sagacity to remark that the process might be regarded as a kind of fermentation.

Thus the living cells of fruits can absorb oxygen and breathe out carbonic acid, exactly like the living cells of the leaven of beer. Supposing the access of oxygen suddenly cut off, will the living fruit-cells as suddenly die, or will they continue to live as yeast lives, by extracting oxygen from the saccharine juices round them? This is a question of extreme theoretic significance. It was first answered affirmatively by the able and conclusive experiments of Lechartier and Bellamy, and the answer was subsequently confirmed and explained by the experiments and the reasoning of Pasteur. Bérard only showed the absorption of oxygen and the production of carbonic acid; Lechartier and Bellamy proved the production of alcohol, thus completing the evidence that it was a case of real fermentation, though the common alcoholic ferment was absent. So full was Pasteur of the idea that the cells of a fruit would continue to live at the expense of the sugar of the fruit, that once in his laboratory, while conversing on these subjects with M. Dumas, he exclaimed, "I will wager that if a grape be plunged into an atmosphere of carbonic acid, it will produce alcohol and carbonic acid by the continued life of its own cells—that they will act for a time like the cells of the true alcoholic leaven." He made the experiment, and found the result to be what he had foreseen. He then extended the inquiry. Placing under a bell-jar twenty-four plums, he filled the jar with carbonic acid gas; beside it he placed twenty-four similar plums uncovered. At the end of eight days he removed the plums from the jar, and compared them with the others. The difference was extraordinary. The uncovered fruits had become soft, watery and very sweet; the others were firm and hard, their fleshy portions being not at all watery. They had, moreover, lost a con-

siderable quantity of their sugar. They were afterwards bruised, and the juice was distilled. It yielded six and a half grammes of alcohol, or one per cent. of the total weight of the plums. Neither in these plums, nor in the grapes first experimented on by Pasteur, could any trace of the ordinary alcoholic leaven be found. As previously proved by Lechartier and Bellamy, the fermentation was the work of the living cells of the fruit itself, after air had been denied to them. When moreover the cells were destroyed by bruising, no fermentation ensued. The fermentation was the correlative of a vital act, and it ceased when life was extinguished.

Lüdersdorf was the first to show by this method that yeast acted, not, as Liebig had assumed, in virtue of its *organic*, but in virtue of its *organized* character. He destroyed the cells of yeast by rubbing them on a ground glass plate, and found that with the destruction of the organism, though its chemical constituents remained, the power to act as a ferment totally disappeared.

One word more in reference to Liebig may find a place here. To the philosophic chemist thoughtfully pondering these phenomena, familiar with the conception of molecular motion, and the changes produced by the interactions of purely chemical forces, nothing could be more natural than to see in the process of fermentation a simple illustration of molecular instability, the ferment propagating to surrounding molecular groups the overthrow of its own tottering combinations. Broadly considered, indeed, there is a certain amount of truth in this theory; but Liebig, who propounded it, missed the very kernel of the phenomena when he overlooked or contemned the part played in fermentation by microscopic life. He looked at the matter too little with the eye of the body, and too much with the spiritual eye. He practically neglected the microscope, and was unmoved by the knowledge which its revelations would have poured in upon his mind. His hypothesis, as I have said, was natural—nay, it was a striking illustration of Liebig's power to penetrate and unveil molecular actions; but it was an error, and as such has proved an *ignis fatuus* instead of a *pharos* to some of his followers.

I have said that our air is full of the germs of ferments differing from the alcoholic leaven, and sometimes seriously interfering with the latter. They are the

weeds of this microscopic garden which often overshadow and choke the flowers. Let us take an illustrative case. Expose boiled milk to the air. It will cool, and then turn sour, separating like blood into clot and serum. Place a drop of this sour milk under a powerful microscope and watch it closely. You see the minute butter-globules animated by that curious quivering motion called the Brownian motion.* But let not this attract your attention too much, for it is another motion that we have now to seek. Here and there you observe a greater disturbance than ordinary among the globules; keep your eye upon the place of tumult, and you will probably see emerging from it a long eel-like organism, tossing the globules aside and wriggling more or less rapidly across the field of the microscope. Familiar with one sample of this organism, which from its motions receives the name of vibrio, you soon detect numbers of them. It is these organisms, and other analogous though apparently motionless ones, which by decomposing the milk render it sour and putrid. They are the lactic and putrid ferments, as the yeast-plant is the alcoholic ferment of sugar. Keep them and their germs out of your milk and it will continue sweet. But milk may become putrid without becoming sour. Examine such putrid milk microscopically, and you find it swarming with shorter organisms, sometimes associated with the vibrios, sometimes alone, and often manifesting a wonderful alacrity of motion. Keep these organisms and their germs out of your milk and it will never putrefy. Expose a mutton-chop to the air and keep it moist; in summer weather it soon stinks. Place a drop of the juice of the fetid chop under a powerful microscope; it is seen swarming with organisms resembling those in the putrid milk. These organisms, which receive the common name of bacteria,† are the agents of all putrefaction. Keep them and their germs from your meat and it will remain forever sweet. Thus we begin to see that within the world of life to which we ourselves belong, there is another living world requiring the microscope for its discernment, but which, nevertheless, has the most important bearing on the welfare of the higher life-world.

And now let us reason together as regards the origin of these bacteria. A

* Which I am inclined to regard as an effect of surface tension.

† Doubtless organisms exhibiting grave specific differences are grouped together under this common name.

granular powder is placed in your hands, and you are asked to state what it is. You examine it, and have, or have not, reason to suspect that seeds of some kind are mixed up in it. But you prepare a bed in your garden, sow in it the powder, and soon after find a mixed crop of docks and thistles sprouting from your bed. Until this powder was sown neither docks nor thistles ever made their appearance in your garden. You repeat the experiment once, twice, ten times, fifty times. From fifty different beds after the sowing of the powder you obtain the same crop. What will be your response to the question proposed to you? "I am not in a condition," you would say, "to affirm that every grain of the powder is a dock-seed or a thistle-seed; but I am in a condition to affirm that both dock and thistle seeds form, at all events, part of the powder." Supposing a succession of such powders to be placed in your hands, with grains becoming gradually smaller, until they dwindle to the size of impalpable dust particles; assuming that you treat them all in the same way, and that from every one of them in a few days you obtain a definite crop—it may be clover, it may be mustard, it may be mignonette, it may be a plant more minute than any of these, the smallness of the particles, or of the plants that spring from them, does not affect the validity of the conclusion. Without a shadow of misgiving you would conclude that the powder must have contained the seeds or germs of the life observed. There is not in the range of physical science an experiment more conclusive nor an inference safer than this one.

Supposing the powder to be light enough to float in the air and that you are enabled to see it there just as plainly as you saw the heavier powder in the palm of your hand. If the dust sown by the air instead of by the hand produce a definite living crop, with the same logical rigor you would conclude that the germs of this crop must be mixed with the dust. To take an illustration: the spores of the little plant *Penicillium glaucum*, to which I have already referred, are light enough to float in the air. A cut apple, a pear, a tomato, a slice of vegetable marrow, or, as already mentioned, an old moist boot, a dish of paste, or a pot of jam, constitutes a proper soil for the *Penicillium*. Now, if it could be proved that the dust of the air when sown in this soil produces this plant, while, wanting the dust, neither the air nor the soil, nor both together, can produce it, it would be obviously just as

certain in this case that the floating dust contains the germs of *Penicillium* as that the powders sown in your garden contained the germs of the plants which sprung from them.

But how is the floating dust to be rendered visible? In this way. Build a little chamber and provide it with a door, windows, and window-shutters. Let an aperture be made in one of the shutters through which a sunbeam can pass. Close the door and windows so that no light shall enter save through the hole in the shutter. The track of the sunbeam is at first perfectly plain and vivid in the air of the room. If all disturbance of the air of the chamber be avoided, the luminous track will become fainter and fainter, until at last it disappears absolutely, and no trace of the beam is to be seen. What rendered the beam visible at first? The floating dust of the air, which, thus illuminated and observed, is as palpable to sense as any dust or powder placed on the palm of the hand. In the still air the dust gradually sinks to the floor or sticks to the walls and ceiling, until finally, by this self-cleansing process, the air is entirely freed from mechanically suspended matter.

Thus far, I think, we have made our footing sure. Let us proceed. Chop up a beefsteak and allow it to remain for two or three hours just covered with warm water; you thus extract the juice of the beef in a concentrated form. By properly boiling the liquid and filtering it you can obtain from it a perfectly transparent beef-tea. Expose a number of vessels containing this tea to the moteless air of your chamber; and expose a number of similar vessels containing precisely the same liquid to the dust-laden air. In three days every one of the latter stinks, and examined with the microscope every one of them is found swarming with the bacteria of putrefaction. After three months, or three years, the beef-tea within the chamber is found in every case as sweet and clear, and as free from bacteria as it was at the moment when it was first put in. There is absolutely no difference between the air within and that without save that the one is dustless and the other dust-laden. Clinch the experiment thus: open the door of your chamber and allow the dust to enter it. In three days afterwards you have every vessel within the chamber swarming with bacteria, and in a state of active putrefaction. Here, also, the inference is quite as certain as in the case of the powder sown in your garden. Multiply your proofs by building fifty chambers

instead of one, and by employing every imaginable infusion of wild animals and tame; of flesh, fish, fowl, and viscera; of vegetables of the most various kinds. If in all these cases you find the dust infallibly producing its crop of bacteria, while neither the dustless air nor the nutritive infusion, nor both together, are ever able to produce this crop, your conclusion is simply irresistible that the dust of the air contains the germs of the crop which has appeared in your infusions. I repeat there is no inference of experimental science more certain than this one. In the presence of such facts, to use the words of a paper lately published in the "Philosophical Transactions," it would be simply monstrous to affirm that these swarming crops of bacteria are spontaneously generated.

Is there then no experimental proof of spontaneous generation? I answer without hesitation, *none*! But to doubt the experimental proof of a fact, and to deny its possibility, are two different things, though some writers confuse matters by making them synonymous. In fact, this doctrine of spontaneous generation, in one form or another, falls in with the theoretic beliefs of some of the foremost workers of this age; but it is exactly these men who have the penetration to see, and the honesty to expose, the weakness of the evidence adduced in its support.

And here observe how these discoveries tally with the common practices of life. Heat kills the bacteria, cold numbs them. When my housekeeper has pheasants in charge which she wishes to keep sweet, but which threaten to give way, she partially cooks the birds, kills the infant bacteria, and thus postpones the evil day. By boiling her milk she also extends its period of sweetness. Some weeks ago in the Alps I made a few experiments on the influence of cold upon ants. Though the sun was strong, patches of snow still maintained themselves on the mountain slopes. The ants were found in the warm grass and on the warm rocks adjacent. Transferred to the snow the rapidity of their paralysis was surprising. In a few seconds a vigorous ant, after a few languid struggles, would wholly lose its power of locomotion and lie practically dead upon the snow. Transferred to the warm rock it would revive, to be again smitten with death-like numbness when transferred to the snow. What is true of the ant is specially true of our bacteria. Their active life is suspended by cold, and with it their power of producing or continuing putre-

faction. This is the whole philosophy of the preservation of meat by cold. The fishmonger, for example, when he surrounds his very assailable wares by lumps of ice, stays the process of putrefaction by reducing to numbness and inaction the organisms which produce it, and in the absence of which his fish would remain sweet and sound. It is the astonishing activity into which these bacteria are pushed by warmth that renders a single summer's day sometimes so disastrous to the great butchers of London and Glasgow. The bodies of guides lost in the crevasses of Alpine glaciers have come to the surface forty years after their interment, without the flesh showing any sign of putrefaction. But the most astonishing case of this kind is that of the hairy elephant of Siberia which was found incased in ice. It had been buried for ages, but when laid bare its flesh was sweet, and for some time afforded copious nutriment to the wild beasts which fed upon it.

Beer is assailable by all the organisms here referred to, some of which produce acetic, some lactic, and some butyric acid, while yeast is open to attack from the bacteria of putrefaction. In relation to the particular beverage the brewer wishes to produce, these foreign ferments have been properly called *ferments of disease*. The cells of the true leaven are globules, usually somewhat elongated. The other organisms are more or less rod-like or eel-like in shape, some of them being beaded so as to resemble necklaces. Each of these organisms produces a fermentation and flavor peculiar to itself. Keep them out of your beer and it remains forever unaltered. Never without them will your beer contract disease. But their germs are in the air, in the vessels employed in the brewery; even in the yeast used to impregnate the wort. Consciously or unconsciously, the art of the brewer is directed against them. His aim is to paralyze if he cannot annihilate them.

For beer, moreover, the question of temperature is one of supreme importance; indeed the recognized influence of temperature is causing on the continent of Europe a complete revolution in the manufacture of beer. When I was a student in Berlin, in 1851, there were certain places specially devoted to the sale of Bavarian beer, which was then making its way into public favor. This beer is prepared by what is called the process of *low fermentation*; the name being given partly because the yeast of the beer, instead of rising to the top and issuing through the

bunghole, falls to the bottom of the cask; but partly, also, because it is produced at a low temperature. The other and older process, called *high fermentation*, is far more handy, expeditious, and cheap. In high fermentation eight days suffice for the production of the beer; in low fermentation, ten, fifteen, even twenty days are found necessary. Vast quantities of ice, moreover, are consumed in the process of low fermentation. In the single brewery of Dreher, of Vienna, a hundred million pounds of ice are consumed annually in cooling the wort and beer. Notwithstanding these obvious and weighty drawbacks, the low fermentation is rapidly displacing the high upon the Continent. Here are some statistics which show the number of breweries of both kinds existing in Bohemia in 1860, 1865, and 1870:—

	1860.	1865.	1870.
High Fermentation	281	81	18
Low Fermentation	135	459	831

Thus in ten years the number of high-fermentation breweries fell from two hundred and eighty-one to eighteen, while the number of low-fermentation breweries rose from one hundred and thirty-five to eight hundred and thirty-one. The sole reason for this vast change—a change which involves a greater expenditure of time, labor, and money—is the additional command which it gives the brewer over the fortuitous ferments of disease. These ferments, which, it is to be remembered, are living organisms, have their activity suspended by temperature below 10° C., and as long as they are reduced to torpor the beer remains untainted either by acidity or putrefaction. The beer of low fermentation is brewed in winter, and kept in cool cellars; the brewer being thus enabled to dispose of it at his leisure, instead of forcing its consumption to avoid the loss involved in its alteration if kept too long. Hops, it may be remarked, act to some extent as an antiseptic to beer. The essential oil of the hop is bactericidal: hence the strong impregnation with hop juice of all beer intended for exportation.

These low organisms, which one might be disposed to regard as the beginnings of life, were we not warned that the microscope, precious and perfect as it is, has no power to show us the real beginnings of life, are by no means purely useless or purely mischievous in the economy of nature. They are only noxious when out of their proper place. They exercise a useful and valuable function as the burners and consumers of dead matter, animal

and vegetable, reducing such matter, with a rapidity otherwise unattainable, to innocent carbonic acid and water. Furthermore, they are not all alike, and it is only restricted classes of them that are really dangerous to man. One difference in their habits is worthy of special reference here. Air, or rather the oxygen of the air, which is absolutely necessary to the support of the bacteria of putrefaction, is absolutely deadly to the vibrios which provoke the butyric acid fermentation. This is most simply illustrated by the following beautiful observation of Pasteur. You know the way of looking at these small organisms through the microscope. A drop of the liquid containing them is placed upon glass, and on the drop is placed a circle of exceedingly thin glass; for, to magnify them sufficiently, it is necessary that the microscope should come very close to the organisms. Round the edge of the circular plate of glass the liquid is in contact with the air, and incessantly absorbs it, including the oxygen. Here, if the drop be charged with bacteria, we have a zone of very lively ones. But through this living zone, greedy of oxygen and appropriating it, the vivifying gas cannot penetrate to the centre of the film. In the middle, therefore, the bacteria die, while their peripheral colleagues continue active. If a bubble of air chance to be enclosed in the film, round it the bacteria will pirouette and wobble until its oxygen has been absorbed, after which all their motions cease. Precisely the reverse of all this occurs with the vibrios of butyric acid. In their case it is the peripheral organisms that are first killed, the central ones remaining vigorous while ringed by a zone of dead. Pasteur, moreover, filled two vessels with a liquid containing these vibrios; through one vessel he led air, and killed its vibrios in half an hour; through the other he led carbonic acid, and after three hours found the vibrios fully active. It was while observing these differences of deportment fifteen years ago that the thought of life without air, and its bearing upon the theory of fermentation, flashed upon the mind of this admirable investigator.

And here I am tempted to inquire how it is that during the last five or six years so many of the cultivated English and American public, including members of the medical profession and contributors to some of our most intellectual journals, could be so turned aside as they have been from the pure wellspring of scientific truth to be found in the writings of

Pasteur? The reason I take to be, that while against unsound logic a healthy mind can always defend itself, against unsound experiment, without discipline it is defenceless. To judge of the soundness of scientific data, and to reason from data assumed to be sound, are two totally different things. The one deals with the raw material of fact, the other with the logical textures woven from that material. Now the logical loom may go accurately through all its motions, while the woven fibres may be all rotten. It is this inability, through lack of education in experiment, to judge of the soundness of experimental work, which lies at the root of the defection from Pasteur.

I will cite an example of this mistake of judgment. Between the large-type articles and the reviews of the *Saturday Review* essays on various subjects are interpolated. In the calm of holiday evenings, while reading these brief essays, I have been many a time impressed, not only with their sparkling cleverness, but with their deep-searching wisdom and their wealth of spiritual experience. In this central region of the review the question of spontaneous generation has been taken up and discussed. The writer is not a whit behind his colleagues in literary brilliancy and logical force. But having no touchstone in his own experience to enable him to distinguish a good experiment from a bad one, he has, on a point of the gravest practical import, committed the influence of the powerful journal in which he writes to the support of error. It is only, I would repeat, by practice among facts that the intellect is prepared to judge of facts, and no mere logical acuteness or literary skill can atone for the want of this necessary education.

We now approach an aspect of this question which concerns us still more closely, and which will be best illustrated by an actual fact. A few years ago I was bathing in an Alpine stream, and returning to my clothes from the cascade which had been my shower-bath, I slipped upon a block of granite, the sharp crystals of which stamped themselves into my naked shin. The wound was an awkward one, but being in vigorous health at the time, I hoped for a speedy recovery. Dipping a clean pocket handkerchief into the stream, I wrapped it round the wound, limped home, and remained for four or five days quietly in bed. There was no pain, and at the end of this time I thought myself quite fit to quit my room. The

wound, when uncovered, was found perfectly clean, uninfamed, and entirely free from matter. Placing over it a bit of goldbeater's-skin, I walked about all day. Towards evening itching and heat were felt; a large accumulation of matter followed, and I was forced to go to bed again. The water-bandage was restored, but it was powerless to check the action now set up; arnica was applied, but it made matters worse. The inflammation increased alarmingly, until finally I was ignobly carried on men's shoulders down the mountain and transported to Geneva, where, thanks to the kindness of friends, I was immediately placed in the best medical hands. On the morning after my arrival in Geneva, Dr. Gautier discovered an abscess in my instep, at a distance of five inches from the wound. The two were connected by a channel, or *sinus*, as it is technically called, through which he was able to empty the abscess, without the application of the lance.

By what agency was that channel formed — what was it that thus tore asunder the sound tissue of my instep, and kept me for six weeks a prisoner in bed? In the very room where the water-dressing had been removed from my wound and the goldbeater's-skin applied to it, I opened this year a number of tubes, containing perfectly clear and sweet infusions of fish, flesh, and vegetable. These hermetically sealed infusions had been exposed for weeks, both to the sun of the Alps and to the warmth of a kitchen, without showing the slightest turbidity, or sign of life. But two days after they were opened the greater number of them swarmed with the bacteria of putrefaction; the germs of which had been contracted from the dust-laden air of the room. And had the matter from my abscess been examined, my memory of its appearance leads me to infer that it would have been found equally swarming with these bacteria — that it was their germs which got into my incautiously opened wound, and that they were the subtle workers that burrowed down my shin, dug the abscess in my instep, and produced effects which might well have proved fatal to me.

We here come face to face with the labors of a man who has established for himself an imperishable reputation in relation to this subject, who combines the penetration of the true theorist with the skill and conscientiousness of the true experimenter, and whose practice is one continued demonstration of the theory that the putrefaction of wounds is to be

averted by the destruction of the germs of bacteria. Not only from his own reports of his cases, but from the reports of eminent men who have visited his hospital, and from the opinions expressed to me by Continental surgeons, do I gather that one of the greatest steps ever made in the art of surgery was the introduction of the antiseptic system of treatment, practised, first in Glasgow, and now in Edinburgh by Professor Lister.

The interest of this subject does not slacken as we proceed. We began with the cherry-cask and beer-vat; we end with the body of man. There are persons born with the power of interpreting natural facts, as there are others smitten with everlasting incompetence in regard to such interpretation. To the former class in an eminent degree belonged the celebrated philosopher Robert Boyle, whose words in relation to this subject have in them the forecast of prophecy. "And let me add," writes Boyle in his "Essay on the Pathological Part of Physik," "that he that thoroughly understands the nature of ferments and fermentations shall probably be much better able than he that ignores them, to give a fair account of divers phenomena of several diseases (as well fevers as others) which will perhaps be never properly understood without an insight into the doctrine of fermentations."

Two hundred years have passed since these pregnant words were written, and it is only in this our day that men are beginning to fully realize their truth. In the domain of surgery the justice of Boyle's surmise has been most strictly demonstrated. Demonstration is indeed the only word which fitly characterizes the evidence brought forward by Professor Lister. You will grasp in a moment his leading idea. Take the extracted juice of beef or mutton, so prepared as to be perfectly transparent, and entirely free from the living germs of bacteria. Into the clear liquid let fall the tiniest drop of an infusion charged with the bacteria of putrefaction. Twenty-four hours subsequently the clear extract will be found muddy throughout, the turbidity being due to swarms of bacteria generated by the drop with which the infusion was inoculated. At the same time the infusion will have passed from a state of sweetness to a state of putridity. Let a drop similar to that which has produced this effect fall into an open wound: the juices of the living body nourish the bacteria as the beef or mutton juice nourished them, and you have putrefaction produced within the system. The air, as

I have said, is laden with floating matter which, when it falls upon the wound, acts substantially like the drop. Professor Lister's aim is to destroy the life of that floating matter—to kill such germs as it may contain. Had he, for example, dressed my wound, instead of opening it incautiously in the midst of air laden with the germs of bacteria, and instead of applying to it goldbeater's-skin, which probably carried these germs upon its surface, he would have showered upon the wound, during the time of dressing, the spray of some liquid capable of killing the germs. The liquid usually employed for this purpose is dilute carbolic acid, which, in his skilled hands, has become a specific against putrefaction and all its deadly consequences.

We now pass the bounds of surgery proper, and enter the domain of epidemic disease, including those fevers so sagaciously referred to by Boyle. The most striking analogy between a *contagium* and a ferment is to be found in the power of indefinite self-multiplication possessed and exercised by both. You know the exquisitely truthful figures regarding leaven employed in the New Testament. A particle hid in three measures of meal leavens it all. A little leaven leaveneth the whole lump. In a similar manner a particle of *contagium* spreads through the human body and may be so multiplied as to strike down whole populations. Consider the effect produced upon the system by a microscopic quantity of the virus of small-pox. That virus is to all intents and purposes a seed. It is sown as yeast is sown, it grows and multiplies as yeast grows and multiplies, and it always reproduces itself. To Pasteur we are indebted for a series of masterly researches, wherein he exposes the looseness and general baselessness of prevalent notions regarding the transmutation of one ferment into another. He guards himself against saying it is impossible. The true investigator is sparing in the use of this word, though the use of it is unsparingly ascribed to him; but, as a matter of fact, Pasteur has never been able to effect the alleged transmutation, while he has been always able to point out the open doorways through which the affirmers of such transmutations had allowed error to march in upon them.*

* Those who wish for an illustration of the care necessary in these researches, and of the carelessness with which they have in some cases been conducted, will do well to consult the Rev. W. H. Dallinger's excellent, "Notes on Heterogenesis" in the October number of the *Popular Science Review*.

The great source of error here has been already alluded to in this discourse. The observers worked in an atmosphere charged with the germs of different organisms; the mere accident of first possession rendering now one organism, now another, triumphant. In different stages, moreover, of its fermentative or putrefactive changes, the same infusion may so alter as to be successively taken possession of by different organisms. Such cases have been adduced to show that the earlier organisms must have been transformed into the later ones, whereas they are simply cases in which different germs, because of changes in the infusion, render themselves valid at different times.

By teaching us how to cultivate each ferment in its purity, — in other words, by teaching us how to rear the individual organism apart from all others, — Pasteur has enabled us to avoid all these errors. And where this isolation of a particular organism has been duly effected it grows and multiplies indefinitely, but no change of it into another organism is ever observed. In Pasteur's researches the bacterium remained a bacterium, the vibrio a vibrio, the penicillium a penicillium, and the torula a torula. Sow any of these in a state of purity in an appropriate liquid; you get it, and it alone, in the subsequent crop. In like manner, sow small-pox in the human body, your crop is small-pox. Sow there scarlatina, and your crop is scarlatina. Sow typhoid virus, your crop is typhoid — cholera, your crop is cholera. The disease bears as constant a relation to its contagium as the microscopic organisms just enumerated do to their germs, or indeed as a thistle does to its seed. No wonder, then, with analogies so obvious and so striking, that the conviction is spreading and growing daily in strength that reproductive parasitic life is at the root of epidemic disease — that living ferments finding lodgment in the body, increase there and multiply, directly ruining the tissue on which they subsist, or destroying life indirectly by the generation of poisonous compounds within the body. This conclusion, which comes to us with a presumption almost amounting to demonstration, is clinched by the fact that virulently infective diseases have been discovered with which living organisms are as closely and as indissolubly associated as the growth of *Torula* is with the fermentation of beer.

And here, if you will permit me, I would utter a word of warning to well-meaning

people. We have now reached a phase of this question when it is of the very last importance that light should once for all be thrown upon the manner in which contagious and infectious diseases take root and spread. To this end the action of various ferments upon the organs and tissues of the living body must be studied; the habitat of each special organism concerned in the production of each specific disease must be determined, and the mode by which its germs are spread abroad as sources of further infection. It is only by such rigidly accurate inquiries that we can obtain final and complete mastery over these destroyers. Hence, while abhorring cruelty of all kinds, while shrinking sympathetically from all animal suffering — suffering which my own pursuits never call upon me to inflict, an unbiased survey of the field of research now opening out before the physiologist causes me to conclude, that no greater calamity could befall the human race than the stoppage of experimental inquiry in this direction. A lady whose philanthropy has rendered her illustrious said to me some time ago, that science was becoming immoral; that the researches of the past, unlike those of the present, were carried on without cruelty. I replied to her that the science of Kepler and Newton, to which she referred, dealt with the laws and phenomena of inorganic nature; but that one great advance made by modern science was in the direction of biology, or the science of life; and that in this new direction scientific inquiry, though at the outset pursued at the cost of some temporary suffering, would in the end prove a thousand times more beneficent than it had ever hitherto been. I said this because I saw that the very researches which the lady deprecated were leading us to such a knowledge of epidemic diseases, as will enable us finally to sweep these scourges of the human race from the face of this fair earth.

This is a point of such special importance that I should like to bring it home to your intelligence by a single trustworthy illustration. In 1850, two distinguished French observers, MM. Davainne and Rayer, noticed in the blood of animals which had died of the virulent disease called *splenic fever*, small microscopic organisms resembling transparent rods, but neither of them at that time attached any significance to the observation. In 1861, Pasteur published a memoir on the fermentation of butyric acid, wherein he described the organism which provoked it; and after reading this memoir it oc-

curred to Davainne that splenic fever might be a case of fermentation set up within the animal body, by the organisms which had been observed by him and Rayer. This idea has been placed beyond all doubt by subsequent research.

Some years in advance of the labors undertaken by Davainne, observations of the highest importance had been made on splenic fever by Pollender and Brauell. Two years ago, Dr. Burdon Sanderson gave us a very clear account of what was known up to that time of this disorder. With regard to the permanence of the contagium, it had been proved to hang for years about localities where it had once prevailed; and this seemed to show that the rod-like organisms could not constitute the contagium, because their infective power was found to vanish in a few weeks. But other facts established an intimate connection between the organisms and the disease, so that a review of all the facts caused Dr. Sanderson to conclude that the contagium existed in two distinct forms: the one "fugitive" and visible as transparent rods; the other permanent but "latent," and not yet brought within the grasp of the microscope.

At the time that Dr. Sanderson was writing this report, a young German physician, named Koch, occupied with the duties of his profession in an obscure country district, was already at work, applying, during his spare time, various original and ingenious devices to the investigation of splenic fever. He studied the habits of the rod-like organisms, and found the aqueous humor of an ox's eye to be particularly suitable for their nutrition. With a drop of the aqueous humor he mixed the tiniest speck of a liquid containing the rods, placed the drop under his microscope, warmed it suitably, and observed the subsequent action. During the first two hours hardly any change was noticeable; but at the end of this time the rods began to lengthen, and the action was so rapid that at the end of three or four hours they attained from ten to twenty times their original length. At the end of a few additional hours they had formed filaments in many cases a hundred times the length of the original rods. The same filament, in fact, was frequently observed to stretch through several fields of the microscope. Sometimes they lay in straight lines parallel to each other, in other cases they were bent, twisted, and coiled into the most graceful figures; while sometimes they formed knots of such bewildering complexity that it was

impossible for the eye to trace the individual filaments through the confusion.

Had the observation ended here an interesting scientific fact would have been added to our previous store, but the addition would have been of little practical value. Koch, however, continued to watch the filaments, and after a time noticed little dots appearing within them. These dots became more and more distinct, until finally the whole length of the organism was studded with minute ovoid bodies, which lay within the outer integument like peas within their shell. By-and-by the integument fell to pieces, the place of the organism being taken by a long row of seeds or spores. These observations, which were confirmed in all respects by the celebrated naturalist, Cohn of Breslau, are of the highest importance. They clear up the existing perplexity regarding the latent and visible contagia of splenic fever; for in the most conclusive manner, Koch proved the spores, as distinguished from the rods, to constitute the contagium of the fever in its most deadly and persistent form.

How did he reach this important result? Mark the answer. There was but one way open to him to test the activity of the contagium, and that was the inoculation with it of living animals. He operated upon guinea-pigs and rabbits, but the vast majority of his experiments were made upon mice. Inoculating them with the fresh blood of an animal suffering from splenic fever, they invariably died of the same disease within twenty or thirty hours after inoculation. He then sought to determine how the contagium maintained its vitality. Drying the infectious blood containing the rod-like organisms, in which, however, the spores were not developed, he found the contagium to be that which Dr. Sanderson calls "fugitive." It maintained its power of infection for five weeks at the furthest. He then dried blood containing the fully developed spores, and exposed the substance to a variety of conditions. He permitted the dried blood to assume the form of dust; wetted this dust, allowed it to dry again, permitted it to remain for an indefinite time in the midst of putrefying matter, and subjected it to various other tests. After keeping the spore-charged blood which had been treated in this fashion for four years, he inoculated a number of mice with it, and found its action as fatal as that of blood fresh from the veins of an animal suffering from splenic fever. There was no single escape from death after

inoculation by this deadly contagion. Uncounted millions of these spores are developed in the body of every animal which has died of splenic fever, and every spore of these millions is competent to produce the disease. The name of this formidable parasite is *Bacillus anthracis*.*

Now the very first step towards the extirpation of these contagia is the knowledge of their nature; and the knowledge brought to us by Dr. Koch will render as certain the stamping out of splenic fever as the stoppage of the plague of *pebrine* by the researches of Pasteur. One small item of statistics will show what this implies. In the single district of Novgorod in Russia, between the years 1867 and 1870, over fifty-six thousand cases of death by splenic fever, among horses, cows, and sheep, were recorded. But its ravages did not confine themselves to the animal world, for during the time and in the district referred to, five hundred and twenty-eight human beings perished in the agonies of the same disease.

A description of the fever will help you to come to a right decision on the point which I wish to submit to your consideration. "An animal," says Dr. Burdon Sanderson, "which perhaps for the previous day has declined food and shown signs of general disturbance, begins to shudder and to have twitches of the muscles of the back, and soon after becomes weak and listless. In the mean time the respiration becomes frequent and often difficult, and the temperature rises to three or four degrees above the normal; but soon convulsions, affecting chiefly the muscles of the back and loins, usher in the final collapse, of which the progress is marked by complete loss of power of moving the trunk or extremities, diminution of temperature, mucous and sanguinolent alvine evacuations, and similar discharges from the mouth and nose." In a single district of Russia, as above remarked, fifty-six thousand horses, cows, and sheep, and five hundred and twenty-eight men and women, perished in this way during a period of two or three years. What the annual fatal-

ity is throughout Europe I have no means of knowing. Doubtless it must be very great. The question, then, which I wish to submit to your judgment is this. Is the knowledge which reveals to us the nature, and which assures the extirpation, of a disorder so virulent and so vile, worth the price paid for it? It is exceedingly important that assemblies like the present should see clearly the issues at stake in such questions as this, and that the properly informed common sense of the community should temper, if not restrain, the rashness of those who, meaning to be tender, would virtually enact the most hideous cruelty by the imposition of short-sighted restrictions upon physiological investigation. It is a modern instance of zeal for God, but not according to knowledge, the excesses of which zeal an instructed public opinion must correct.

And now let us cast a backward glance on the field we have traversed, and try to extract from our labors such further profit as they can yield. For more than two thousand years the attraction of light bodies by amber was the sum of human knowledge regarding electricity, and for more than two thousand years fermentation was effected without any knowledge of its cause. In science one discovery grows out of another, and cannot appear without its proper antecedent. Thus, before fermentation could be understood, the microscope had to be invented and brought to a considerable degree of perfection. Note the growth of knowledge. L  euwenhoek, in 1680, found yeast to be a mass of floating globules, but he had no notion that the globules were alive. This was proved in 1835 by Cagniard de la Tour and Schwann. Then came the question as to the origin of such microscopic organisms, and in this connection the memoir of Pasteur, published in the "*Annales de Chimie*" for 1862, is epoch-making, proving, as it did to all competent minds, spontaneous generation to be thus far a chimera. On that investigation all Pasteur's subsequent labors were based. Ravages had over and over again occurred among French wines. There was no guarantee that they would not become acid or bitter, particularly when exported. The commerce in wines was thus restricted, and disastrous losses were often inflicted on the wine-grower. Every one of these diseases was traced to the life of an organism. Pasteur ascertained the temperature which killed these ferments of disease, proving it to be so low as to be perfectly harmless to the wine.

* To produce its characteristic effects the contagium of splenic fever must enter the blood. The virulently infective spleen of a diseased animal may be eaten with impunity by mice. On the other hand, the disease refuses to be communicated by inoculation to dogs, partridges, or sparrows. In their blood *Bacillus anthracis* ceases to act as a ferment. Pasteur announced more than six years ago the propagation of the vitriols of the silkworm disease called *flacherie*, both by scission and by spores. He also made some remarkable experiments on the permanence of the contagium in the form of spores. See "*Etudes sur la Maladie des Vers    Soie*," pp. 168 and 256.

By the simple expedient of heating the wine to a temperature of fifty degrees centigrade, he rendered it inalterable, and thus saved his country the loss of millions. He then went on to vinegar—*vin aigre*, acid wine—which he proved to be produced by a fermentation set up by a little fungus called *Mycoderma aceti*. *Torula*, in fact, converts the grape-juice into alcohol, and *Mycoderma aceti* converts the alcohol into vinegar. Here also frequent failures occurred and severe losses were sustained. Through the operation of unknown causes the vinegar often became unfit for use, sometimes, indeed, falling into utter putridity. It had been long known that mere exposure to the air was sufficient to destroy it. Pasteur studied all these changes, traced them to their living causes, and showed that the permanent health of the vinegar was ensured by the destruction of this life. He passed from the diseases of vinegar to the study of a malady which a dozen years ago had all but ruined the silk-husbandry of France. This plague, which received the name of *gêbrine*, was the product of a parasite, which first took possession of the intestinal canal of the silkworm, spread throughout its body, and filled the sack which ought to contain the viscid matter of the silk. Thus smitten, the worm would go automatically through the process of spinning when it had nothing to spin. Pasteur followed this parasitic destroyer from year to year, and, led by his singular power of combining facts with the logic of facts, discovered eventually the precise phase in the development of the insect when the disease which assailed it could with certainty be stamped out. Pasteur's devotion to this inquiry cost him dear. He restored to France her silk-husbandry, rescued thousands of her population from ruin, set the looms of Italy also to work, but emerged from his labors with one of his sides permanently paralyzed. His last investigation is embodied in a work entitled "Studies on Beer," in which he describes a method of rendering beer permanently unchangeable. That method is not so simple as those found effectual with wine and vinegar, but the principles which it involves are sure to receive extensive application at some future day. Taking into account all these labors of Pasteur, it is no exaggeration to state that the money value of his work would go far to cover the indemnity which France had to pay to Germany.

There are other reflections connected with this subject which, even were I to

pass them over without remark, would sooner or later occur to every thoughtful mind in this assembly. I have spoken of the floating dust of the air, of the means of rendering it visible, and of the perfect immunity from putrefaction which accompanies the contact of germless matter and moteless air. Consider the woes which these wafted particles, during historic and pre-historic ages, have inflicted on mankind; consider the loss of life in hospitals from putrefying wounds; consider the loss in places where there are plenty of wounds but no hospitals, and in the ages before hospitals were anywhere founded; consider the slaughter which has hitherto followed that of the battle-field, when those bacterial destroyers are let loose, often producing a mortality far greater than that of the battle itself; add to this the other conception that in times of epidemic disease the self-same floating matter has frequently, if not always, mingled with it the special germs which produce the epidemic, being thus enabled to sow pestilence and death over nations and continents—consider all this and you will come with me to the conclusion that all the havoc of war, ten times multiplied, would be evanescent if compared with the ravages due to atmospheric dust.

This preventible destruction is going on to-day, and it has been permitted to go on for ages, without a whisper of information regarding its cause being vouchsafed to the suffering, sentient world. We have been scourged by invisible thongs, attacked from impenetrable ambuscades, and it is only to-day that the light of science is being let in upon the murderous dominion of our foes. Men of Glasgow, facts like these excite in me the thought that the rule and governance of this universe are different from what we in our youth supposed them to be—that the inscrutable Power, at once terrible and beneficent, in whom we live and move and have our being and our end, is to be propitiated by means different from those usually resorted to. The first requisite towards such propitiation is *knowledge*; the second is *action*, shaped and illuminated by that knowledge. Of knowledge we already see the dawn, which will open out by-and-by to perfect day, while the action which is to follow has its unfailing source and stimulus in the moral and emotional nature of man—in his desire for personal well-being, in his sense of duty, in his compassionate sympathy with the sufferings of his fellow-men. "How often," says Dr. William Budd in his celebrated

work on typhoid fever,—"How often have I seen in past days, in the single narrow chamber of the day-laborer's cottage, the father in the coffin, the mother in the sick-bed in muttering delirium, and nothing to relieve the desolation of the children but the devotion of some poor neighbor, who in too many cases paid the penalty of her kindness in becoming herself the victim of the same disorder." From the vantage-ground already won I look forward with confident hope to the triumph of medical art over scenes of misery like that here described. The cause of the calamity being once clearly revealed, not only to the physician, but to the public, whose intelligent co-operation is absolutely essential to success, the final victory of humanity is only a question of time. We have already a foretaste of that victory in the triumphs of surgery as practised at your doors.

J. TYNDALL.

From Good Words.

WHAT SHE CAME THROUGH.

BY SARAH TYTLER,

AUTHOR OF "LADY BELL," ETC.

CHAPTER LII.

REPUDIATION AFTER REJECTION.

MR. WOODCOCK had some business which imperatively demanded his presence at Shardleigh, but after it was settled his next destination was the north of Scotland. In the facilities for travelling which awaited his necessities and his convenience, within three days of his drive with Mrs. Douglas on the King's Road, Brighton, he found himself in a scene well-nigh as far removed in features from the colossal watering-place on the coast of Sussex, as Timbuctoo is from Tyburnia.

In place of the low, bare downs, the white chalk, the limitless sea, he had the lofty mountains, the grey granite, and the narrow, rushing rivers of north-western Perthshire. For the tumult and hum of London on the shore, he had the silence of the everlasting hills, broken only by the echoing roar of the railway which has invaded even these solitudes, or the stray crack of a gun, and the crow of a moorcock.

Since he left the train, Mr. Woodcock having hired what he called a fly and the hotel-keeper a carriage at the Station Hotel, drove into yet deeper recesses of the Highlands, until the wilds—not in

their salient features merely, but in their lesser individual traits—were all around him. Here were waving birch, and mountain ash, with the berries turning from wax to coral, thick oak coppice, brakes of blue-green junipers, endless reaches of yellowing bracken, purple heather, and red ling, tall purple and white foxgloves among the rocks, downy white cotton-grass on the bogs, and the scent of the bog myrtle, and the reek of the peat hovering over all.

Mr. Woodcock had often been in the Highlands before, and had leased shootings of his own, which had brought him into closest contact for weeks with that landscape which, when not blurred by rain, or shrouded in mist, can boast in its poverty such giant forms and grand outlines, such colors of "purple, and orange, and grey" in heather, lichen, bracken, golden oats, and bald crag, as no other province in this great, prosperous, and fertile Great Britain can show.

Archie had taken a shooting-lodge in the shadow of Schihallion, and was keeping house there for the present with several old college men, to whom Douglas once of King's shootings formed common ground.

Notwithstanding the host's inherent sociality, Mr. Woodcock was told that Mr. Douglas had gone out alone. And it was coming back alone from the hill in his shooting-coat and knickerbockers, with his dog and his gun and a heavily laden game-bag, that Mr. Woodcock—taking advantage of a fine evening to stroll from the unfenced lawn up on the moor—met the man of whom he had come in quest. Archie's dark face—burnt to a tint nearer that of mahogany than any it had taken at Manor Farm—first flushed purple, and then paled to a yellow brown, as he recognized his visitor, and without any of his mother's gracious dissimulation, called out, "What brings you here, Woodcock? Is there anything wrong with—" he stopped a second without supplying a name, and then he changed the form of his question, "Have you come from my mother and Jane?"

"I saw them at Brighton the other day, but I have not come directly from them. I am from Shardleigh, and I have taken a run north, for the purpose of talking over a curious example of the law's delay, or rather an incredible instance in which law and justice have fallen short—till now—in which you have an interest."

"Is that all?" inquired Archie in a tone made up of intense relief and a faint echo of disappointment. "Thanks for your

attention to my interest, but your story will keep. I shall be late for dinner, and the fellows in the lodge there are always as hungry as hawks; neither, I dare say, will you have any objection to having your creature comforts seen to after your journey. You must stay a week, and we must give you the best sport as well as the best cheer going, in return for your tramp, or rather your ride. The grouse are suffering from some of their usual ailments, but they are no worse here than elsewhere, and the fellows say the cook is up to the mark."

It was spoken with a well-simulated reflection of the ready, unstinted hospitality which might have been expected from Archie Douglas, or Joel Wray, but there was a strong, half-smothered effort at spontaneity which a practised eye could detect in the whole reception.

"I have shot with you, Archie, and you know the length of my tether," said Mr. Woodcock, with alacrity and with a modest consciousness of his own merits as a sportsman; "but I am not going to brag of the steadiness of my eye and my hand, not to say the length of my wind, in a trudge over the moors with a parcel of lads who might be my grandsons. And unless the grouse are the reverse of shy, I could not undertake to make so heavy a bag as that," glancing aside at the trophy of Archie's skill. "Are the birds bold, or were you early out?"

"I don't know that the birds or the amount of time have much to do with it," said Archie, playing with the lock of his gun. "I really believe that, conceit apart, I deserve what credit is going. I am in capital 'fettle' for slaughter, as Laren says," he added with a laugh. "The other fellows get weary, or hungry, or have letters to write, or want to pay visits to the next shootings; but I go in for hard work, and I never seem to need an unyoking. I was out at five this morning, and I started again after luncheon—the very keeper lay sleeping with his bonnet over his face by the spring, when I stole a march upon him—but I am afraid I have lamed my best dog, poor brute, good Flora! she would limp after me, though she must have seen that I was unconscionable. Commend me to a dog for fondness. I must see to her foot and her supper myself, before I sit down to my own dinner, so come along, else the fellows will be fit to gnaw their own boots, or fall foul of each other."

Mr. Woodcock had no chance of speaking to Archie till three hours afterwards,

when cigars and bedroom candles were lit in company. Archie was determined and indefatigable in serving his friends and guests, as only a genuine host can serve them; just as he went in for hard work in sport, or cared for his dog's foot, or had been given to patronizing everybody in past days and in a different sphere. If there was a disproportionate price paid for the privilege of serving, only the servant himself in such silent, passive tokens as the harassed, careworn lines imprinting themselves on the pleasant prepossessing face and depriving it prematurely of its youthfulness, was there to own it.

The room used by the gentlemen as a smoking-room was, in the homely adaptability of the lodge, a little library where correspondents wrote letters; a stray book on a lounging-chair, even indicated that reading was occasionally done there when the weather was hopelessly wet, and when eyes did not close and heads nod with sheer fatigue, and the strength of the mountain air.

Mr. Woodcock took up one of these books of light reading, and found that it was Clough's poems, opening in the middle of the "Bothy," with Archie Douglas's name on the title-page.

"It is a parcel of lies, like much poetry and many books," said Archie, curtly, not appearing to relish Mr. Woodcock's inspection of his studies. "I took it up before these fellows came. Mrs. Maclaren, that is the wife of Laren Maclaren, the head keeper who had the sense to marry a cook—the same that 'does for us'—has a *rara avis* in her assistant, who cannot have touched the chair from that time to this. What would any of you fellows give for such a dame in college, or clerk in chambers? As for me, I think I shall renounce chambers and libraries as resorts for owls and bats. I have a fancy for setting out on long travels out of order, Woodcock. I have rather a notion of making acquaintance with the Bret Harte fraternity—the heathen Chinese and the rest of them, and of coaching them into greater honesty and less brutality, and being coached by them, in return, in muscular Christianity, away over in California. I should not object to seeing the man in Oregon, up amongst the bears and the snows, who went about clad in sacks, armed with a long bow and bowie knife, and kept a copy of 'Nicholas Nickleby' in his provision-chest."

"In the mean time I must have a few words with you, on my business, Archie, and as the day is given up to sport, we

must make the best of what is left of the night," said Mr. Woodcock, drawing Archie out on the lawn. There walking up and down with the rays of the young moon, too faint to light up telltale faces, though it revealed dimly vast ranges of mountains, called in their indefiniteness, and to distinguish them from the towering, distinct, and separate sentinels of the landscape such as Schihallion, Ben Lawers, or Ben-y-Gloe, glens, Glen Ordell, Glen Dowart, Glen Ard, Mr. Woodcock told Archie Douglas of Pleasance's acquisition of fortune.

Archie heard the tale silently. His first observation was, "Did she send you to me?" and except for the restraint, so extreme as to sound harsh in his voice, nothing could be drawn from it.

"I cannot say she did," said Mr. Woodcock, with a little hesitation, "she made a communication with reference to you—a natural communication from her point of view. It was that she would not want anything more from you."

"Yes, I see, I thought so," said Archie, with bitterness, "having refused to fulfil her obligations, the moment it is in her power, she adds repudiation to rejection. She will have nothing more to do with me—not so much as to accept the wretched dowager house at Stone Cross with the pittance attached to it."

"You forget," said Mr. Woodcock, preferring to take the remark literally, "that it has been in her power all the time, since you conceded her the right to dwell apart, to refuse to accept from you the provision which I induced her to take, for your credit and good name in the world. The fact is, that since she married without any settlement, and since her grandfather made only such provision for the marriage of the girls as turns out worthless, she has no separate control of her property. I must inform her she is as much dependent upon you as ever."

"That is all fudge, and you know it, and so does she. It is very well in the eye of the law," said Archie, in a tone of exasperation, "but you are aware sense and feeling have something to say to it also. The plain truth is, that I have married a woman with whom I have quarrelled, who has on that account declined to live with me, and who on her accession to an unlooked-for inheritance throws me back the allowance which she had from me. Of course I have nothing to say against it. I have nothing to do with her wealth—if wealth it be, though I will go so far as to say that I suppose I ought to be

glad, and to wish her joy of her good fortune which has freed her from any claim on me. I believe she will make an excellent use of it. Your super-human, super-wise, unrelenting woman, is apt to be as virtuous to the world at large as she is pitiless to the one offender—the worse luck to the weak, erring wretch, who would collapse before her tremendous superiority, if she had anything to do with him."

"Archie," said Mr. Woodcock, "there are some affairs which a man must manage for himself, and in which he must be the best judge of his own good; but you will hear this appeal from an old friend. You are a young man, you have a long life, I trust, before you, which may be made or marred by your present conduct. Is your quarrel with your wife—who was your own choice, and, as it seemed to me, one of the most attractive women I ever met—irremediable?"

"I believe so," said Archie, doggedly. "No, Mr. Woodcock, it won't do. Both she and I made a capital mistake, and utterly misunderstood each other. This will not mend it. Mend! it will but serve to consummate it. There was no occasion for your coming north to tell me that Mrs. Archie Douglas was gently born, on one side of the house like myself—I knew that from her own lips already—and had succeeded to tens of thousands, making her one of the heiresses of the day. That is news to me, but it is certainly no concern of mine, as I do not happen to be a better sort of blackleg, to make harvest of our division, and seize upon my wife's fortune, which does not belong to me. Having Shardleigh and rather more money than I can spend, I have not even the pretence of needing to spoil her goods as well as to make her miserable; but really I will do myself the credit to say, that I do not think I have the inclination. You can conceive what the forgiveness of such a woman thoroughly offended means—sad cold condemnation. She cannot help it, it is the essence of her unbending righteousness of character which has rendered the punishment heavier than the offence; but she is incapable of weighing that. I could not stoop and subject myself to it, not while I retained a man's strength and spirit. If I were old and broken, I grant you, I might creep home and beg her to pardon and speak a soft word to me—if that could be—the last thing; but I could not do it now. We will not speak any more of it, save that I could have waited for the tidings that I am saved a second dowager's allowance. But come, old friend," broke

off Archie, his passion melting into kindness, "don't let it interfere with your satisfaction on her account. She is your friend, you know, which I can freely own is to the honor of both. Don't let it prevent your having a jolly time, like the other fellows, up in Glen Ard. What would you like to do to-morrow? Shall it be deer, or grouse, or salmon trout? And have you any choice of the quarter any more than the victims? You shall have my best gun or rod, and Laren will lead a pony in case you get foot-sore; you are not case-hardened as we are."

All the comfort Mr. Woodcock could take under the circumstances was, that so much remained of the Archie of old, in this impracticable Archie caught in the toils, and refusing to stir hand or foot, to break the meshes towards his own deliverance.

CHAPTER LIII.

A FREE WOMAN.—AN EMBASSY FROM THE GABLE HOUSE.

PLEASANCE was free—so far as being constrained to be the chief pensioner on her husband's bounty, and to submit to the rules laid down for a dowager, were concerned. Her second inheritance, of an amount of property which would have overwhelmed her and been a distressing anomaly in the old days at the manor-house, had done her this good turn. And as gifts alter with standards, so Pleasance, after the first sharp recall of what might have been, was only sedately impressed by the prospect of the large income which would not only, as she imagined, entitle her to live where and how she liked, and to travel far and near, but which would bring with it its own duties and obligations.

Pleasance said she was, and was sure she was, thankful for independence, for her father's acknowledgment of his children in this proof of his fatherly concern for their welfare.

She tried to keep from thinking how much more joyous that earlier inheritance had been, which came clogged with no burdens. It brought only pleasures, and reached her when the future lay all before her, and no disaster beyond cure had robbed life of hope and heart to her—that small heirship over which she had sung as she portioned it into friendly offerings of a softer chair for Mrs. Balls, a new whip for Long Dick, a crutch for Lizzie Blennerhasset, and a collar for Pincher.

With regard to her personal inclinations, Pleasance told herself, with a little laugh, that she should like nothing so well as to have a farm of her own like the Manor Farm, whether at Heron Hill or elsewhere, engage servants, stock it with animals, and be her own steward. It would give her some pleasure to wander in her own fields, and superintend her own dairy and poultry-yard, to see to the feeding of her own oxen and sheep and hogs, as well as to pet her lambs and calves.

Then she shook her head at the idea, and renounced it, not only as too full of memories, but as belonging to the past with which she had done, and to a stage in her life on which she felt the curtain had fallen. She had a conviction that there was neither right reason nor true morality in insisting on retracing her steps, and taking up again the associations and aspirations which had been dropped in the natural course of events. That would be at once like "greetin' ower scaill milk," and like putting new wine into old bottles. Better go on her journey of life treading fresh paths, and learning, if possible, wider and higher lessons.

Pleasance had written to Mr. Woodcock immediately after she had been summoned by Mr. Mott to have her grandfather's will disclosed to her, and she had then expressed the intention which he had conveyed to Archie Douglas, that if the will took effect, she would not accept a further allowance from Mr. Douglas of Shardleigh. The conclusion had seemed to Pleasance merely just and a matter of course. She had written it not only without a particle of malice, but without much thought or feeling on the subject.

It was not till the realization of her purpose drew near, that she recoiled from what might look like a swift, contemptuous, and triumphant casting-off of the countenance and support which she had received. She became sensible that she was about to quit all that she knew of home for a second time in her life. She was to go forth once more on the world, not only a much poorer woman, in reality, than the young working-girl who had entered so gaily on her portion of a few hundreds, but actually, in the middle of her independence, a more desolate and exposed woman than the alien wife who had consented to be dependent, and had been passed on and established under cold, tolerating, and protecting auspices in the dowager establishment of Willow House.

In the mean time all the good that Pleasance got out of her inheritance was, that

she felt suddenly freed from a fear which had lately visited her, lest the dowager income settled on her, which had seemed so large at first, should prove in the end, what with her vicarious house-keeping, her charities, and her prospects of travel—if she should be enabled to put them into execution—insufficient for her wants. This result appeared so intolerable in her case, that Pleasance was resolved it should never happen with her will, if denial of private tastes and staying at home for the rest of her life, could prevent it.

But there was no longer the fear of a collapse. So Pleasance, who had been growing penny-wise, and in danger of taking to scraping and hoarding, indulged herself in unlimited supplies of market flowers and native birds, in such bits of old brown carved wood and blue and white china, with maize and scarlet Mentone baskets, as she had learned to fancy, to relieve the hard, rather than cool prevailing grey, of the Willow House drawing-room.

That drawing-room remained no longer uninvaded. The dean's wife, followed by the wives of subordinates in the close and of members of the smaller gentry in the neighborhood, took advantage of Pleasance's recent appearance on Lady Lewis's birthday to set on foot inroads on Pleasance's retirement and to make overtures to her acquaintance, which she did not know how to repel. She continued shy and indifferent, for she could not see how she could do any good to these people, or they to her, so that they would never be really friends; but she had ceased to be actively hostile.

She received the explanations delicately made to her by her neighbors of their having heard that she was out of health, and desirous of living in strict seclusion, while she believed them so far as to think she had brought the influx upon herself by going to Lady Lewis's. She was still so unworldly that it hardly occurred to her, in the middle of her lingering prejudice, to attribute the tide of company to the discovery that she was descended from the Hattons of Redmead, and was the true heiress of Heron Hill and its mines.

Pleasance paid the penalty—so far as she understood it—quietly; she had not been accustomed to call social fatigues a bore, and she found her guests perfectly civil in her own house. She endured them stoically, though she was chary of returning their civilities.

If Pleasance had known it, her manners,

with their curious mixture of educated intelligence, formality, rusticity, native friendliness, and that tinge of shyness, which was held sensitive pride, were highly approved of at Stone Cross. They were voted original and charming, the very manners for a newly-found heiress.

Pleasance had one little surprise in connection with her visitors. A voluble lady let fall the singular piece of information that her old friend Mrs. Douglas, from whom she had heard lately, had evidently taken it for granted that she, Mrs. Fielding, must know Mrs. Douglas's daughter-in-law. Mrs. Fielding further inferred, from the letter, that Mrs. Douglas was coming herself to Stone Cross during the autumn, and hoped to meet Mrs. Fielding and Pleasance together.

"You must be mistaken," Pleasance had said coldly; "I shall be gone from Stone Cross before then;" but in her own mind afterwards she could not account for the mistake. A still greater shock in the form of an ovation was in store for Pleasance.

She had seen and heard nothing of her kindred at the Gable House lately. She believed that they had started without a day's delay for London to meet the son and brother, and to consult with the lawyers on the receipt of the startling, unwelcome intelligence which threatened to oust them from Heron Hill, with its mineral wealth, and instal in their place the long-neglected relative, who had turned up unpropitiously in the person of Archie Douglas's low-born wife, the very young woman whom Rica had been bent on treating as a tool and butt.

Sometimes it had crossed Pleasance's mind that the recent flocking of old friends and neighbors of the Wyndhams to greet their rival and successor in the coveted possession of Heron Hill, was not very complimentary to the allegiance of those good folks. She had certainly never expected to see the Wyndhams themselves at her door, or in her drab drawing-room. She had decided that her cousin Rica's first visit with Jane Douglas would be her last. Pleasance had been fully persuaded of the conclusion, even when she had answered Mr. Woodcock's request for her mind on the matter, by giving him entire power to make such concessions in remitting past obligations as could be permitted in the interest of both parties. "I am quite aware," Pleasance had wound up her letter to Mr. Woodcock, "that the involuntary suppression of my grandfather's will, of which

everybody concerned — not even excepting poor old Mr. Mott — was innocent, has been a great misfortune to the Wyndhams, as well as to me."

A few weeks afterwards, Pleasance coming down-stairs, and glancing out of the staircase window which commanded the cathedral and the street, saw the Wyndhams' phaeton drawn up at the gate of the Willow House, Rica already alighted and Mrs. Wyndham in her imposing proportions, preparing, with her manservant's assistance, to follow slowly her daughter's example.

Pleasance needed the little time that she had gained to recover herself.

It was all very well to have preached to herself tolerance and amnesty in time past, and to have recalled her own offences and bidden herself be charitable towards her fellow-offenders. It was equally simple to say that outward familiarity had deadened the pain, and almost taken away the consciousness, of looking upon the woman of her own blood who had yet been so pitiless to her youth and to Anne's, and whose pitilessness had been the cause of Anne's death and of all the confusion and suffering which had followed.

It was another thing for Pleasance, not only to be brought face to face with her aunt, but to have that aunt come to the niece whom she had relentlessly turned back to her proper place, as Pleasance instinctively felt Mrs. Wyndham must have come, an appealing suppliant. And if Pleasance grew giddy and sick with the reversal, what were Mrs. Wyndham's feelings? What were the feelings of Rica, who had been twice superseded, and who, when only partially acquainted with the facts, had sought in her philosophical fashion to amuse herself with her humble supplanter in Archie Douglas's favor?

Pleasance with her quick sympathy put herself in her aunt and cousin's goaded and galled places, bearing her own burden all the while, and could have sunk into the earth under the double consciousness. It was only when she began to recover that she became sensible with a faint gleam of humor flickering across her pain, that she was feeling for all three. However sorely and grievously disappointed, intensely chagrined, even considerably alarmed, Mrs. Wyndham and Rica might be, they were still cool and confident mistresses of the situation. It was Pleasance, who was hot and cold and quivering, distracted and penetrated with shame

for those who might be mortified, but who in their obliviousness and audacity carried their mortification cavalierly, and felt little or no shame for themselves.

"I suppose I must be mistress of the ceremonies," said Rica, "as I have the advantage of a previous though slight acquaintance with the lady of the house. Mamma, this is Mrs. Archie Douglas, your long-lost niece as it proves, who has turned up so opportunely for herself, and so inopportunely for us; but is there not a proverb, it is not lost that a friend gets? Cousin Pleasance, we must renew our friendship in a fresh form. I am sure you will forgive me, if I do not take to it at first so aptly as to the old."

"Yes, my wild girl anticipated matters, it seems, by breaking down barriers and insisting on knowing you," said Mrs. Wyndham, making an effort, and looking with her cold, dark eyes into Pleasance's agitated face.

"Romantic people would say it was the mystic tie of blood that impelled me," said Rica, "but I am not romantic, and I should not think the mystic tie would extend to cousins, that would be making it too cheap."

"How long it is since I have lost sight of you!" said Mrs. Wyndham again, with a very slight shade of awkwardness, but rather in an accent of lofty reproach. "Why did you not seek to communicate with me again? I had nearer relations and many engagements, but you were not so engrossed. You, my brother Frederick's child, ought to have made some attempt to revive my recollection of you and to win my regard."

"You forget, Mrs. Wyndham," said Pleasance with returning spirit, "that in the only letter we, Anne and I, had from you, we were told that you had done with us, and forbade us to approach you in future."

"But I had received provocation," Mrs. Wyndham prepared to defend herself.

"You might have had," said Pleasance. "You were two very rash, foolish, I must say rude girls; you were badly advised by your friends."

"We had no friends," said Pleasance with a sad, fleeting little smile. "I must take all the blame that is due."

"I do not wish to reflect upon your poor sister."

"We had better not speak of her," said Pleasance, drawing her breath faster and making a restless movement. In reality

Pleasance had a great fear of herself, lest she should be driven to retaliate on the enemy who was in her power.

"Indeed I do not desire to pain you, Mrs. Douglas," said Mrs. Wyndham, suddenly recalling the motive of her visit. "I believe that in family quarrels there are generally faults on both sides." Having made the liberal admission, she smiled with a kind of stony graciousness, settled the folds of her rich dress, and looked the beauty she had been before Pleasance was born. "For that reason the past is better let alone, don't you think so? I am glad that you have managed to do well for yourself, in spite of omissions which we may still be able to effect something to remedy."

"In short, now that mamma has found you, she is prepared to be proud of you. I do not say that it is your reward for captivating and fixing for a sufficient length of time a *parti* understood to be so fastidious and capricious—in spite of his deceptive good nature—as Archie Douglas. I am afraid that we should never have discovered and made the best of you, even for that great merit, had it not been for the last strange turn of affairs which we feel to our cost, and which has made cultivating you our best policy. I am honest, Mrs. Archie Douglas, or cousin Pleasance, let it be which you prefer, but I mean it to be a mutual benefit," said Rica with her bold bravado.

"My dear Rica!" protested her mother, but with unflinching indulgence, "Mrs. Douglas, my niece, had need to be acquainted with your naughtiness, which passes all bounds."

"Mamma," interposed Rica again, "I don't think that it is any compliment to your niece, as you have grown fond of calling her within the last ten minutes, though we had scarcely heard that you had a niece till five or six weeks ago, to suppose her such a goose as not to comprehend that we cannot help ourselves. We have been completely sold by the impropriety—according to our side of the question—of grandpapa's having let himself be played upon by Uncle Fred, to make what is for us so fatal an alteration in his will, and by the drivelling imbecility of that old wretch Mott, who ought to be hanged for his part in the transaction. But the abominable will is right and good, and we are forced to throw up the game, and make what terms we can with the winners. I hope you admire my frankness, Mrs. Douglas."

"I think I estimate it at what it is worth," said Pleasance.

"Rica, Rica, do not interrupt me perpetually, child, and increase my difficulties a hundredfold by making game of this disaster as of everything else; of course you are in jest, and Mrs. Archie Douglas sees it. But let me speak, let me do what I am come here for," began Mrs. Wyndham again, with a submissive patience and self-abnegation, where her own child was concerned, that went near to touching Pleasance. "I do not attempt to conceal," continued Mrs. Wyndham, with a return to her dictatorial pomposity, "that this discovery of a later will of my father's, devising away Heron Hill, now that it is become far more valuable than Redmead, is a very serious matter to us. And as my father never could have contemplated benefiting you and your sister whom he had not seen or heard of until a few days or weeks before he made this will, at the expense of his other grandchildren whom he knew and loved, it strikes me that circumstance should be taken into account in the decision. But the lawyers will not hear of it."

"It is the chance of war," said Rica.

"Neither could my father's father have contemplated our reverses," said Pleasance.

"I grant there may be some truth in what you say," admitted Mrs. Wyndham; "but only think of it, make it your own case," she urged with increasing warmth. "My children have been brought up in luxury, with warrantably high expectations. My son, whom you have never met" ("That pleasure is in store for you, and you two are safe to agree," said Rica with the utmost gravity), "my only son," Mrs. Wyndham resumed the lead in the conversation without suffering herself to be put out, "has never done anything that his mother could find fault with," she added proudly, "though I might have wished that he had gone into Parliament, where I have no doubt he would have made a figure, or married and settled down quietly at Sefton Hall, his father's place, or at Redmead, mine" ("What a pity you are married, cousin Pleasance!" said Rica in another audible aside). "But such has not been his inclination, and as he has had the expensive tastes and pursuits of his age and class, both properties have become a good deal burdened. There was no occasion for him to save, with the Heron Hill rents always increasing and coming in to supply all deficiencies. I need not say that it was with my entire consent he borrowed money on Redmead."

Rica looked what she would fain have said, but still had the grace left to refrain from saying—that her brother was the most selfish, unscrupulous man upon the turf, who ever ran through family possessions, and impoverished and encumbered his widow mother, whose estate was not nominally his, in her lifetime.

"My elder daughter Nelly," Mrs. Wyndham spoke on, standing in the breach, and waxing long-winded for the honor and profit of her family, "has married into the ancient and noble Roman house of Barbarelli, compared with which the houses of our English nobility are only of yesterday. It was a connection that would have been a source of satisfaction to any Talbot or Howard among us, since our insular prejudices are not proof against the superior culture of the higher classes. My son-in-law, Count Pietro, is a noble fellow in himself; while Nelly's palace in Rome has such gems of art, such pictures, cabinets, and tapestry, and the grounds of her country-house have such cypresses and citron-trees, as put our poor sign-painters' daubs, upholsterers' hangings, and ribbon-bordered gardening to shame. But only a few of the old Italian nobles retain much beyond their palaces, and lands which are not profitable in a commercial sense, and the Barbarelli are not among the few."

"That is to say," explained Rica, "that my thrice-noble brother-in-law, count of the Roman empire, as far back as it will go, and as fiercely proud as a paladin, is as poor as a church-mouse. Poor Nelly in her palace is constantly begging mamma to send her cheques—to furnish her and the little counts and countessinas with necessities—not to say to defray Count Pietro's display on the Corso, and his losses at cards."

"Rica's playful exaggeration is a version of the truth," allowed Mrs. Wyndham with a sigh. "Nelly, in spite of her promotion, is forced to seek help from her family, until the death of Count Pietro's father."

"Until doomsday," asserted Rica coolly. "the penurious old count standing in the gap, does more than prevent the settlement of present claims, he stops the incurring of fresh debts, which will go on apace when he sleeps with his fathers. Count Pietro is so used to insolvency, that it is like native air to him; even his pride does not prevent his flourishing upon debt, like a child, who neither knows how to spend nor how to spare the first money it

has had in its life, while Nelly has grown desperate."

"Rica and I don't require much," proceeded Mrs. Wyndham, with a sort of haughty humility; "even if we should never be able to afford another season in town, we can keep house here, or at Redmead, when Tom does not want it, quietly enough. Only it goes to my heart to look forward to my child's being deprived of the advantages to which she is entitled, and of all proper opportunities of settling in life."

"Don't mind me, mamma," observed Rica carelessly. "I was getting sick of seasons in town, when the proper man was never spoony upon me, and I had begged off from the last. I should not mind trying the village-maid dodge, seeing how it prospers."

"You do not understand—a dear, thoughtless, unworldly girl cannot measure such losses," said Mrs. Wyndham, in melancholy comment on Rica's impertinence.

"Will you excuse me for asking you a direct question?" said Pleasance to Mrs. Wyndham. "As far as I have been able to follow, you have described the advantages, with their attendant disadvantages, that your children have enjoyed; but why tell it all to me? Indeed, I seek to be just and gentle where our claims clash; but I had rather that you would say plainly what you expect from me, and I shall comply if I can."

"Thanks, I could not for a moment imagine that you would be utterly unreasonable. I did give you credit for a little tact. It was impossible for me to suppose you could be guilty of refusing to meet and consult with me as a friend on our mutual position," acknowledged Mrs. Wyndham with the most comfortable self-satisfaction, instead of the most uncomfortable gratitude.

"I told you that the benefit was to be mutual," said Rica nodding.

Pleasance did not see the mutual nature of the benefit, but she possessed her soul in patience and was silent.

"My dear—you will allow me to call you so?" said Mrs. Wyndham with increased condescension.

"Call me what you please," said Pleasance; "but surely we are, to say the least, stranger kinswomen to each other."

"That fault will soon be amended," announced Mrs. Wyndham, with what sounded like a ponderous copy of Rica's airiness. "I am afraid that I must approach a delicate subject in explaining

myself farther to you. I do not pretend yet to my niece's confidence, but I must allude to an incompatibility of temper between her and your husband, which has resulted in a separate maintenance. I must refer to the fact that the Douglas family have not taken you up, or given you the least countenance beyond the permission to reside here, which is only one way of getting rid of you."

"Mrs. Wyndham," said Pleasance with burning cheeks, "if you mean to insult me after all, which I can hardly conceive under present circumstances, I decline to be insulted by the truth which you have spoken. But what have my personal affairs to do with this discussion?"

"A great deal, if you were not too brusque to suffer me to finish what I had to say," retorted Mrs. Wyndham; "you must get rid of this brusqueness, if you would have me make anything of you. Mrs. Archibald Douglas, you must be aware that you will be, even with the inheritance which you propose to take—I do not say unwarrantably, I allow naturally, when it is in your power—from my children, a young woman in a very difficult position. You will need not only all your newly-acquired fortune, but all the friends you can win to support you, in order that you may get a proper introduction into society and standing in the world."

"And mamma and I will undertake for a trifling consideration—plain speaking is best, is it not?—for some compensation to Tom and the rest of us, and for mamma and me, the use of your town-house, or opera-box, or of your carriage-horses when we don't have our own—bagatelles of that kind, simply to tame you, coach you, and introduce you into the great world under our all-powerful auspices. What do you say to it? I assure you I am quite in earnest," declared Rica coolly.

In her excitement, indignation, affront, and sense of ludicrousness combined, Pleasance did not cry that it was too much; when she found that her forgiveness was to merge into her being suborned and bribed, she startled her newly-found relations by laughing tremulously. "I beg your pardon," she said, abashed at her own untimely mirth; "but you are quite mistaken in my aims and expectations, and I am utterly incapable of profiting by your kind intentions. I was not even aware that I required an introduction or standing in the world, which I entered very nearly twenty-two years ago, and in which I have made my own way till very

late. Shall I say that I am not to be bought, and neither am I to be laughed out of any favor that I can confer? For anything more, you are freely welcome to the best terms that your lawyers can make—I have written to that effect—or to any other worldly benefit that I can render you, for I agree with Mrs. Wyndham that the case is a hard one for you in the end, as for me and mine in the beginning. But you must consent to take any favor as a gift—as your right if you will—but not as your purchase. It is not only that I refuse to barter such small power as has fallen into my hands, and that I profess to be incorruptible, but that literally you can offer me nothing. I will not enter into your world, I do not own your standard."

"Ah," said Rica quickly, "your disinherited prince who has come into his own again, or your beggar millionaire is apt to be *tête exaltée* at first; but wait a bit, till the gates, not of heaven, but of the pleasantest places of the earth, don't fly open to his 'Open sesame,' as he in his conceit has fancied, but grate on their hinges for want of a little of the oil of old-established proprietorship, *convenance* and *savoir faire*, he is fain to come down a flight, and accept the obliging aid which he spurned before. I don't despair of being your Mentorina and right-hand woman yet, cousin Pleasance."

Mrs. Wyndham had been staring blankly. "I am ready to excuse a great deal that is odd and unpleasant, I am ready to encounter and conquer it, if possible, for the sake of my children, and of my niece to whom I had hoped that my experience and influence might have been of use," she said almost speaking to herself in her amazement and incredulity. "Of course no knowledge of the world, no good-breeding even, was to be expected. Still, you do not mean that you reject the good offices of the only relations you have in the world, Mrs. Douglas; relatives who, I may say it without partiality, would be a priceless boon to any *débutante* or *nouveau riche*, and who have shown you a worthy example in ignoring the painful rivalry involved in your claim?"

"I do not mean to fail in magnanimity," said Pleasance, inclined to laugh again.

"Impossible! you cannot understand," persisted Mrs. Wyndham, "Frederica and I had talked the matter over, and we had agreed that you should spend the next winter in Rome; Nelly's palace has suites of spacious rooms at the command of visitors." ("Especially if they be heiresses.

The Roman palaces have no end of accommodation for heiresses. I should not wonder if they would lodge you in the Vatican itself," commented Rica.) Her mother went on without attending to the comment, "Nelly and the count will dispense to you a princely hospitality. You will see the best Roman society at and from their house. You will acquire a good foreign style, which is generally admired, and which will conceal the deficiency in early training that is much to be regretted now, as events have happened; but who could have foreseen them?" asked Mrs. Wyndham with a tragic emphasis.

"A good foreign style, like charity, covers a multitude of sins," put in Rica. "Indeed, Mrs. Douglas, you will be a great fool not to take our embassy in good part, and make the most of it. It has just struck me that the position is like that of Cinderella, who, I have no doubt, married her two usurping sisters to gentlemen about court, that they might be conveniently at hand to supply her with little hints for her behavior as a princess. Do think of Cinderella, and not of 'The Mysteries of Udolpho,' or 'The Romance of the Forest' (I know you read novels); believe me the Italian bravo with his stiletto is quite out of fashion. We have not the slightest intention of making away with you, in recommending you to spend a little time with Nelly at Rome."

"I do not think you have," replied Pleasance; "but I must refuse what I cannot avail myself of."

"Never mind, mamma," said Rica, "beggars should not be choosers. A truce is established. Mrs. Archie Douglas is to deal with us poor usurpers leniently. Ah! I forgot that the Christian charity was to be all on our side; but so it will come about eventually, and until then we shall bide our time;" and Rica drew away her mother before she had done more than express a tithe of her astonishment at Pleasance's continued refractory attitude after all these years and changes. Not all Mrs. Wyndham's devotion to her children's interests could, for the moment, stifle her displeasure at the reception given to her fine stroke of diplomacy.

When her visitors were gone, Pleasance's ill-timed laughter passed into a few quiet, but bitter, tears of pain, wrath, and ruth over her nearest relations in the world; as Mrs. Wyndham had said, who were worse than strangers to her, and over what seemed the mockery of forgiving offenders who would not be forgiven, who saw no occasion for forgiveness, and whose

unblushing overture was made with the open purpose of retrieving a portion of their losses

From Fraser's Magazine.
THE ASTRONOMY OF THE FUTURE.

A SPECULATION.

WE venture to express an opinion that popular knowledge on the subject of astronomy is still in a very old-fashioned, conventional, Newtonian condition. Men are still too apt to allow themselves to be guided by the literal evidence of their senses and the superficial appearances of things, a misleading condition and influence against which it is the purpose of true philosophy to guard our minds. Modern ideas in chemistry and electricity are, moreover, necessary; for one form of science cannot afford to dispense with the aid and illumination of another.

In manuals of astronomy our youth are taught that the sun is a dark globe inclosed in a photosphere or luminous envelope, partly composed of divers metals in a state of intense incandescence and of gases blazing away furiously. We are told that observers can really see the surface of this "luminary" in a terrible condition of turbulent combustion, that the vapor of molten metals can be detected in its rays, and that its light and heat have been calculated to a mechanical nicety, almost as far as figures can be conceived by the ordinary human mind. It has also been made a subject of estimate how long the sun can exist at its present rate of combustion and self-consumption, as this "central fire" of the solar system is said to give out in each second of time heat equivalent to that produced by the burning of eleven thousand six hundred millions of millions of tons of coal! We are also told that the incandescent metals in the sun, revealed by the spectroscope, differ from what is apparent in the light of the stars. We do not doubt the existence of the phenomena so clearly shown by scientific men, but we are tempted to dissent from the conclusions deduced; and we think the time has arrived when the notions which have been so systematically repeated to us should be thoroughly re-examined, and, we are inclined to say, discarded.

In this essay we merely propose to draw the outlines of what appears to us to be an improved system; and though other writers, unknown to us, may have antici-

pated most of our views, our doctrines will be none the worse if they are proved not to be novel.

The version of astronomical phenomena which has hitherto been given to us may possibly turn out to be a huge menagerie of scientific bugbears, calculated to astonish and fascinate the imaginations and wonderment of simple-minded, credulous students. Let us beware of scientific superstition; it is as fruitful a source of error as that which claims a bastard relationship to religion.

In its revelations of the organization of the sun, science plumes itself upon its capacity of triumphantly disclosing and demonstrating the secrets, methods, and laws which underlie the grand aspects and mysteries of nature. Is this boast justifiable? What do we really know of the sun? and are our scientific guides and explorers thoroughly correct in all the information they deal out to us? In opposition to the generally received theory, would our readers "be surprised to hear" that the sun is not necessarily luminous; and that beyond the range of our atmosphere he is possibly cold and dark, and would there be invisible? At a first glance this statement is, perhaps, startling.

But if we suppose the sun and stars to be gigantic fountains of magnetic influence, centres of polarized force—attraction and repulsion—acting upon our globe and its atmosphere, and likewise upon all the other planets, the phenomena of the universe would then become susceptible of the grandest and simplest interpretation.

To explain the effects of the sun there is not the least reason to infer that it is itself luminous or even warm. It may be one of the sources of heat without being itself hot, as heat is doubtless the product of combined influences. This opinion may be elucidated by an example. Take a galvanic battery, which is a dark, cold machine; introduce a little acidified water into its cells and set it in action; by a proper arrangement of wires you may at a long distance from your battery produce a heat intense enough to fuse the hardest metals, and a light too vivid to be endured by the human eye. Now, if, while this result is being accomplished, we could see with enhanced powers of vision the action of the dilute acid on the metal plates of the galvanic battery, we should discover on their surface a process of rapid oxidation going on analogous on a small scale to the commotion apparent on the face of the sun, which phenomenon might easily

be mistaken for violent combustion, and which in fact, judging by the impression made on the senses, could not readily be conceived to be anything else.

Thus we learn that potent action generated in a dark, cold body may produce great light and heat at a distance from the seat of activity; and what is thus wrought artificially in a small way by a galvanic battery may surely be done naturally, in a tremendous fashion, by the grand forces of the sun.

When we gaze on Mont Blanc at sunset, if our judgment were left to the untrained evidence of our senses, we might easily be led to believe that summit of the mountain to be a luminous and incandescent pinnacle, passing through all the hues of the solar spectrum, and finally disappearing in a ghostly white; but knowledge and experience tell us a different tale and correct our inferences. We ascend the mountain, and we find a cold cone of snow!

The appearance of Mont Blanc presented under this aspect is, however, so far distinct from that exhibited by the sun, that the sunset brightness of Mont Blanc is a vision of momentarily-born illusion, whereas the light of the sun is the result of intense action and conversion of substance on its surface, and necessarily an originating force.

In estimating the power, quantity, and endurance of the light and heat of the sun, we must first know where the light and heat begin their evolution. If they are a production bred in our atmosphere by the magnetic action of the sun, and the sun is only one of their causes, we must draw very different conclusions respecting the attributes of light and heat than if we credited the sun with the sole responsibility of their origin.

The intense magnetic action of the sun may present on its surface and in its rays all the appearance of incandescence, when it is rendered visible here by means of our atmosphere and examined by instruments constructed for the detection of solar and astral phenomena.

About the beginning of this century the celebrated French philosopher Biot produced light by passing a current of electricity through air or a gas. Is it not a reasonable inference that the sun does not waste light and heat—diminishing as the square of the distance—through a space of ninety millions of miles between us and itself, when by the means of ethereal and atmospheric conditions the requisite quantity of light and heat might so easily be distributed at the precise spots where it is

needed? With the conditions that surround us on this earth, we cannot artificially produce light and heat without the destruction of some material substance; but we are not driven to assume that the same conditions prevail naturally in the sun; and even if a process of self-consumption were continually going on in that body, we are equally justified in drawing the inference that it possesses some infinite means and capacity of self-repair. We think, therefore, that we can naturally account for all the phenomena of heat and light and the appearance of incandescence and flame on the surface of the sun, without resorting to the tremendous theory that the sun is actually in a state of combustion as understood in our terrestrial experience.

Upon this theory that the sun has the power of distributing sufficient light and heat to the various planets according to the nature of their atmospheric conditions, the doctrine which has been taught about Mercury being as hot as a furnace, and Saturn as cold as an iceberg, may in future be received with a smile of incredulity.

It is one thing to observe phenomena accurately, and quite another thing to reason about them correctly. In spite of all our boasted astronomical discoveries, our certain knowledge of the celestial machinery is really limited to ascertaining the motion of our globe in relation to the motions of other heavenly bodies. After some thousands of years of observation we have learnt only the rate at which we are moving through space. Our science of the universe is merely a science of motion — "that and nothing more!"

And here we may appropriately inquire whether we really know anything about the cause of the motion of the heavenly orbs. The old-fashioned theory of the centripetal and centrifugal forces does not appear to answer this question satisfactorily; and we therefore venture to propose as a substitute what we may term the "polarity of the universe," as a more sufficient and efficient explanation of the movements of the solar system. By "polarity" we mean the power of electricity manifested in attraction and repulsion, viz., the attraction which exists between positive and negative poles, and the repulsion which is exhibited when two positive or two negative poles are presented to each other. If we can successfully apply this theory of polarity to the phenomena of the motions of the solar system, we shall in future be required to teach that the rotation of the planets on

their axes is caused by currents of electricity and magnetism; and that the revolutions of the planets round the sun are produced and maintained by these bodies constantly presenting in a slanting direction their opposite or similar poles, and thus gradually and alternately attracting and repelling each other, and keeping up continued movement, necessarily varied in distance and rapidity.

According to this theory, there is no fear of two heavenly bodies coming into collision in space, unless their opposite poles happened to meet, and even then they would probably cling together without doing much damage, until some rival influence separated them and sent each on its natural course; but the active motion of two such bodies would, most probably, always prevent that steadiness of approach necessary to insure cohesion.

In propounding this system, are we not flying in the face of the greatest philosopher that ever lived — Sir Isaac Newton? Let us examine this question briefly but attentively. It is no reflection upon Sir Isaac Newton, one of the most renowned men of all time, that he did not invent a hundred and fifty years ago a theory for which all the elements did not then exist. If he lived now, he would doubtless choose by the light of modern science a different vocabulary. "Gravitation" is merely a word expressive of an idea used to interpret a certain class of phenomena, some of which can now be better explained by the aid of more developed ideas, and a more true and refined nomenclature.

The method adopted by Sir Isaac Newton in demonstrating the theory of universal gravitation was very grand and simple; and it was soon received admiringly by the whole world. The explanation may be found in any text-book on the subject, but we may as well reproduce it in an elementary manner. It had been previously proved that on our earth the so-called force of gravity acts inversely as the square of the distance; and it was inferred that if this force extended throughout the solar system, the phenomena it caused and presented in the movements of the moon ought to correspond with what was known of its action on the earth. The lunar observations made and supplied by Flamsteed enabled Newton to put this theory to the test with a triumphant result. By a series of masterly calculations, he demonstrated that the versed sine of an arc of the moon's orbit agreed exactly with the distance which the moon would travel if she were left

entirely to the action of gravitation only: that is to say, that the power of gravity at the distance of the moon would be about 3,600 times less than at the surface of the earth. The distance of the moon from the earth's centre is about 60 times the earth's radius, and as the square of this distance is 60 times 60, or 3,600, a body near the earth ought to fall in one minute 3,600 times farther than the length of the versed sine of an arc described by the moon in its orbit in the same time. Nothing could be more beautiful and conclusive than this proof of the correspondence of fact with theory; but it does not in any way interfere with the introduction of polarity as an explanation of the cause of the revolutions of the heavenly bodies; because we know that all the great forces of nature—light, heat, gravitation, electricity, magnetism—are regulated by the same law, viz., that their power acts inversely as the square of the distance, subject of course to the variability of conditions, for conditions modify the action of laws. In our proposed system we can therefore accept Newton's demonstration of universal gravitation, and treat it as the discovery of one mode of polarity. As the action of gravity is the same as that of polarity in one direction, we may still conveniently use the word "gravitation" to express this aspect of polarized force; but as gravity causes motion in only one direction—the centripetal—it is, of course, insufficient to explain the revolutions of the planets without resorting to the theoretical addition of another force, which was named the centrifugal, the existence of which could only be accounted for by supposing that it was derived from the original impulse or *primum mobile* given to these heavenly bodies at their creation, and since sustained by the hand of the Creator.

The substitution of the terms "electrical attraction" and "repulsion" for "centripetal" and "centrifugal forces," may therefore be recommended as conveying a clearer theory of the revolution of the planets for the following reasons. It is evident that this centrifugal force must soon expire unless it is fed from some central exhaustless power, and the supporters of this idea do not supply us with a sufficient cause for the continued sustenance of the centrifugal force, unless it be traceable to the direct power of the Almighty. The introduction of the Creator into this stage of the *modus operandi* of nature is, however, unphilosophical; as we have no right in a scientific expla-

nation to balance one force against another, and call one of them the fiat of the Creator, as we are bound to believe that in the beginning all forces were created by Him. In fact, this style of theorizing must be temporary, and is simply a mode of concealing our ignorance. But if we resort to electricity with its attraction and repulsion—in a word, polarity—as offering an explanation of the motions of the universe, we fancy that we present a theory which is at once comprehensive and scientific. The correctness of this interpretation is supported, as far as can reasonably be looked for, by mechanical contrivances. The process here advocated has been actually shown in a working model. An electrical orrery has been constructed which, by the discharge of electricity from points, represents the movement of the earth round the sun, and that of the moon round the earth, with the most surprising completeness.

The movements of the moon have, however, not yet been reduced to mathematical order; they exhibit aberrations which the astronomer royal has been engaged some years in studying, and his "theory of the moon" is yet far from complete. If, however, the moon is acting under the influence of polarity, these irregularities are what we ought to expect, and their satisfactory solution can scarcely be triumphantly sought in the manœuvring of old problems and the marshalling of old laws.

We must, of course, continue to believe and maintain that the various attractions to which we give the names of "gravity," "cohesion," "capillary," are all-important on this earth, and keep everything here in its right place; and that centrifugal force as the product of rotatory machinery has its proper sphere in our mundane science; but we should hesitate before we extended to the universe forces which are not proved to be adequate for the work and purpose ascribed to them. And, in fact, there is no real analogue among our earthly forces to the centrifugality attributed of the planets in their orbits.

On this point we wish to render our argumentative position quite clear to the intelligence of the ordinary reader, to whom we specially address ourselves; and we shall therefore endeavor to work out this problem very distinctly.

The most superficial scholar knows what is the received explanation of the movement of the planets round the sun, viz., that when the planet is first hurled on its course its tendency is to go in a straight line; but this tendency is arrested by the

attraction of gravitation, and the two forces acting in rectangular opposition to each other cause the orb which they control to move in a curve. It was, however, discovered that in practice this curve did not form a perfect circle, but an ellipse, and that the motion of the planet was accelerated in some parts of its orbit when it was nearest the sun, and retarded when it was farthest from the sun. The cause of this discrepancy was attributed to the antagonistic action of the centripetal and centrifugal forces; as the attraction of gravitation, or centripetal force, gradually overcomes the centrifugal, the planet is drawn nearer the sun and its speed in its orbit accelerated. This acceleration of speed develops an increase of the centrifugal force, or tendency to fly off at a tangent, so that the two forces thus balance themselves, and the integrity of the orbital movement is preserved. This view of the matter is a plausible assumption and is acceptable in the absence of any materials for the construction of a better explanation. We must, however, call attention to the weak spot in this theory. The acceleration of speed is caused by the attraction of gravitation, which is therefore for the time being the dominant power. This increase of velocity is supposed to develop, as a counterpoise, a force so potent in opposition to that what which caused it, that this developed force is, in its turn, capable of overcoming that which is primarily the stronger; so that the superior power is supposed to give birth to a force which can govern its parent; and thus cause and effect alternately become the stronger and control each other! The product is supposed to be able to meet the producer on equal terms. What a scene of scientific confusion is here presented to our view! When once gravity begins to overcome a rival force, its career of conquest cannot be arrested except by the arrival and intervention of a third independent power, and the introduction of this third power is not properly and scientifically accounted for under the old system which we are combating. The accelerated speed already alluded to is not such a ruler as we can recognize as an independent potentate. It is, in fact, the creature and subject of the superior force, gravity, and it must become the ally of its monarch; it cannot rebel and join the opposition which has once allowed it to elude the centrifugal grasp.

The advocates of this contradictory system of causation endeavor to reconcile it to our common sense and tempt us into

adopting it by resorting to an illustration which, as a comparison, is altogether fallacious. They depict a man whirling round a stone in a sling, and tell us that we have here something like a representation of a planet moving in its orbit round the sun. The stone is held in its place by the string—analogous to the attraction of gravitation—and the faster the man whirls round the sling, the more potently is the centrifugal force developed; and when the stone is released, the more violently does it fly off in a straight line. In this object of comparison we must notice that there are three powers present, very unlike in their attributes, viz., the hand of the man governed by his mind, the sling, and the motion of the sling: the sole originating motive power which pervades and sustains the whole operation is the will-energy of the man; when that is withdrawn, the action ceases. If we could suppose the hand of the Creator at the centre of the solar system, intelligently, actively, and personally employed in regulating and upholding the movements of the planets round the sun, the comparison with the man-and-sling figure would be fair and complete; but we are bound to raise the fatal objection to this supposition by pointing out that it is not permitted to science to enter into the presence of the Creator himself, so as to trace his conduct and examine his actions. The proper office of science is to discover and expound the eternal laws and temporal methods of working with which the Almighty has endowed nature, and by which her operations are governed. The moment we address ourselves direct to the Creator, we cease to be scientific, and we become theological.

The theory of polarity as an explanation of the movements of the universe will, we believe, get rid of a great deal of the subtle confusion that has hitherto prevailed; and, we venture to think, will offer for general acceptance something more lucid and philosophical than the old mechanical doctrine of the centripetal and centrifugal forces—a doctrine which appears to us an inadequate explanation of the grand processes to which it is applied. Centrifugal force is the result of a repellent, and not an attractive, power. The existence of this repellent power is not properly accounted for in the Newtonian system; but by the theory of polarity we acknowledge two forces of equal rank, quality, and might, which are all-sufficient for the work they are appointed to do, and their generator, electricity, governs them both with requisite supremacy.

If there be any force in what we have put forward, we must considerably modify if not banish the old-fashioned doctrines from our astronomical science, if we would in future associate finer and truer ideas with the subtle powers of the universe, and express in more comprehensive language the sublime order and methods of her working. We cannot, however, by the utmost exercise of human skill, hope to penetrate very far into the mysteries of nature. Like the Mohammedan deity, she is covered with seventy thousand veils; after an age of labor, we may succeed in lifting one of these veils, but another appears behind.

NEWTON CROSLAND.

From The Argosy.

CINDERELLA.

How very many adventurous spirits went out to Australia during the prevalence of the gold-fever some twenty, or more, years ago, and went out to die, will never be disclosed.

Amidst others who went out, was one Philip Gay. A sanguine, hopeful young man, who thought that while it might take the best part of a life-time to make a fortune at civil engineering, he should pick up one in a year or two at the gold diggings. How full of hope he was when he sailed with some four or five other young men who made up his party, some of his acquaintances remember yet. He left his wife at home with her young baby; his wife who was just as full of hopeful visions as he was.

Of that party, Philip Gay was the first to die. His wife, stricken with the news, led a sort of half dead, half alive existence for a year or two, and then followed him to the unknown land that is at once so much nearer than that one of the gold mines, and so much farther off. The baby girl alone was left, the little Lucinda.

The child was not utterly destitute. A few hundred pounds remained to her, and one relative. This was Mrs. Munro; whose late husband, for she was a young widow also, had been Mrs. Gay's brother.

Mrs. Munro was not left particularly well off herself: at any rate, her income was not large, and she had to be careful. Of course, being a provident and calculating lady, Mrs. Munro could not be expected to burden herself with the little orphan, Lucinda, and take her home to her

own two daughters: she said so herself and her friends agreed with her. So the little child was sent to a plain school to be brought up in a plain manner; to defray the cost of which the few hundred pounds had to be treasured upon.

"The money must be made go as far as it will," said Mrs. Munro, "and then we shall see."

Lucinda was seventeen when the last pound came to an end, and she was sent home to Mrs. Munro.

"And what on earth's to be done with her I can't tell," observed Mrs. Munro to her daughters, Elizabeth and Laura. "We must keep her here for a little while, just to see what she's made of and what she's fit for, and then get her a situation of some kind."

"You can make her useful while she stays here," observed Elizabeth, who was three-and-twenty years of age, and very practical.

A particularly welcome suggestion indeed to Mrs. Munro. She was no better off than some of her neighbors in the matter of domestics. She professed to keep two, a cook and a housemaid: but whether she was a bad manager and mistress, or whether she had the ill-luck to get a succession of bad servants, certain it was that the domestic department was generally in a state of ferment. The said servants were changed continually; sometimes there would be two; sometimes only one, sometimes none: and the result was much dissatisfaction and discomfort. The two young ladies, fashionably educated, bristling to the fingers' ends with accomplishments, could not be expected to look after brooms and brushes, plates and dishes: and Mrs. Munro was often at her wits' ends, and could not imagine what the world was coming to.

Lucinda Gay arrived at Milthorp Lodge—as their pretty country home was named. It stood very close to the little town of Milthorp; ten minutes' walk from it. A gentle, timid, graceful girl of seventeen; with a fair, delicate, placid face, bright hair, and a steadfast look in her large grey eyes.

"Dear, dear! the very eyes of your poor father, my dear!" sighed Mrs. Munro, who in the main was not by any means bad-hearted; and would not have been short-tempered but for her domestic trials. "You get more and more like him, child. Kiss your cousin, girls."

Elizabeth and Laura did as they were told, and kissed Lucinda. They were both good-looking, showy young women.

Well, not to make a short story long, Lucinda Gay's abode at Milthorp Lodge grew into a permanency. Little by little also, the *work* grew upon her. From having at first been required to help only in light duties, she found herself at last to all intents and purposes a servant: kept from morning till night at hard work. This was the effect of necessity, more than of actual wish or intention on Mrs. Munro's part. The servants got worse and worse, each succeeding one that came in turned out to be more incapable than her predecessor; and who was there but Lucinda to fall back upon? By the time the girl had been there a few months, she seemed to have settled down to this hopeless life of slaving in the kitchen and waiting upon others. Elizabeth and Laura playfully called her Cinderella: when in a very good humor with her, Cindy.

Once, and once only, the girl remonstrated with Mrs. Munro. "I don't like the life, aunt," she said: "I never expected to have to do such things. Don't you think you could let me go out somewhere?"

"What to do?" asked Mrs. Munro. "As servant?"

"Oh, no" — blushing painfully — "not as servant."

"But you could not be a governess. You have no accomplishments."

"I fancy sometimes that I could make money by my drawings, aunt. No one in the school could draw as I did."

"Draw! school!" repeated Mrs. Munro. "You did not learn drawing at school. You did not learn any superfluous thing of that kind that had to be paid for."

"Yes, I did. It happened in this way, aunt. I used to copy the girls' drawings out of school; it was all my pastime; and one day the master saw some that I had done, and he asked to speak to me. Then he told Mrs. Cheshunt I had so decided a talent for the art he would like to give me lessons for nothing, that I might do him credit. After that, I always went in with the rest. Do you know what he said when I left, aunt?"

"What did he say?"

"That I might rise to have a name in the world of art if I practised diligently."

"And how in the world would you live while you practised it, Cindy?" demanded Mrs. Munro.

Cindy looked distressed.

"My dear, don't you be ungrateful. Remember your poor father. He took up flighty notions and schemes — and he paid

for it with his life. For goodness' sake, don't you turn flighty, Cindy, and follow his example."

The tears gathered in Lucinda's eyes; and she said no more. Like all people who have a good and tender heart, ingratitude appeared to her to be one of the very worst of sins.

So from that day she settled down to her lot, resigned outwardly if not inwardly. All the spare moments she could snatch from her duties were spent in her own room, drawing in private. Elizabeth and Laura went out to *fêtes* and dances and entertainments. Poor Lucinda was never asked to go with them; she had no toilette for it: and if at times a longing for a little change came over her spirit, a sense of neglect that somehow did not seem right, she shut herself in with her paper and pencils and forgot the slight.

And thus things went on for about a twelvemonth from the time of the girl's first arrival at Milthorp. Day by day she seemed to be separated more and more from her cousins; between her condition and theirs a greater and greater barrier grew. Lucinda would sometimes ask herself whether things were to go on thus forever.

II.

It had been a long, hot, July day. The sun had gone down in a blaze of glory; a soft purple haze lay low in the valleys. All the doors and windows of Milthorp Lodge were thrown open to catch the grateful cool of the evening. In the large, old-fashioned porch sat Elizabeth with a book: Laura lay back on the sofa indoors, fanning herself languidly.

Cindy, in the kitchen, had just finished washing up and putting away the tea-things. Just now they enjoyed the services of a particularly incapable helpmate, who impeded work, rather than did it; and all the labor fell on Cindy. For many months now Mrs. Munro had not attempted to keep more than one servant: her niece filled the place of the second.

Cindy took off her large apron, went out of doors, and ventured to seat herself on a garden bench under the wall behind the porch. She possessed this one peculiarity — though they did call her Cinderella: that she was always nice and neat. Her dresses were of the cheapest materials — cottons, thin stuffs: but somehow she kept them fresh and well. Not a spot was on her naturally delicate hands this evening as she sat down; not a hair out of place on her pretty head.

The small iron gate, hidden by the trees and shrubbery, was heard to open and footsteps to approach: and the postman came into view with his bundle of letters.

"Well, I never!" exclaimed Mrs. Munro, seeing him from the window. "What can the man be coming here so late for? Postman," she added, walking forth to the porch, "what brings you here at this 'time of night?'"

"An accident to a goods train, which blocked up the line, ma'am," replied the man, as he detached a letter from his bundle and handed it to her. "It has delayed the delivery several hours."

She sat down at the entrance of the porch, nearest the light, put on her spectacles, and opened her letter. It appeared to be rather a short one, and Mrs. Munro read it twice over.

"I'm sure I don't know what to say about it!" she exclaimed, in self-soliloquy. "I should like it well enough: but—I hardly know."

Elizabeth Munro, apathetical as usual, went on reading, showing no curiosity. Laura came out, twirling her fan.

"Who is your letter from, mamma?"

"Why, from Emma Allardeen. She says her brother wants a spell of country air, after his recent illness, and she was so happy here during her week's visit to us two years ago, that she ventures to hope we will receive him. And here's a little twisted note inside from himself, asking if I will be bothered with him for a month or two."

"I should let him come," observed Laura—who had a faint recollection of an exceedingly good-looking and attractive man in young Allardeen, and was ever open to the prospect of a flirtation.

"But think of the trouble!" cried Elizabeth, too strong-minded to have latent views of lovers. "It would be quite a restraint to have to entertain a sick man for two months!"

"I don't suppose he is ill now, Lizzie," observed her mother. "What I think of, girls, is the extra work it would entail. And of all wretched, incapable creatures, that Susan who is with us now is the worst!"

"Stuff!" said Laura, slightly.

"There's Cinderella."

"What do you think, Cindy, dear?" cried Mrs. Munro, in a soft, coaxing tone. "Would you mind a little more trouble for a short while? What is the matter, Lucinda?"

The young girl had her speaking face

turned to them, all eagerness and excitement.

"Is it William Allardeen the painter, aunt, that you are speaking of?"

"To be sure it is, child."

"Oh, but he is a great man; a true artist. I went to see one or two of his paintings once; they were in a collection of pictures that was being exhibited. The school all went. Aunt Munro, I would not mind what work I did for him; I'd never think of the trouble."

"That's all right, Cindy: I thought you'd be reasonable. Girls, I shall write my answer to-night, and tell him to come."

And in the course of a few days he did come, this William Allardeen. A handsome, manly-looking fellow, in spite of his recent illness, of some thirty years. Well-born and well-bred, he had some blue blood in his veins. And he had something better—a good, honest heart.

He was not an amateur—he painted for money. Perhaps it would be better to say he painted for love—love of the art—and sold his pictures afterwards. Being entirely independent as to fortune, he could afford time to do good work, and to do it well. Full of all beautiful enthusiasms, with an eye that was quick to see, an ear to hear, and a heart to feel whatever was best worth seeing and hearing and feeling, was it any wonder that he was sweet-tempered and charming, and that he brought into the house a glow brighter than that of the summer sunshine?

Was it strange that, ere he had been at Milthorp Lodge a week, there should be fluttering in the dove-cote?

Laura Munro was beautiful, and she knew it, and meant to make the most of it. Beautiful with mere physical beauty—the beauty of roundness and coloring, of pink and white skin, blue eyes and golden hair. She was not going to marry a small Milthorp landowner, to superintend his dairy, attend to her own babies, vegetate within the prosy doors of her dull home from the first of January to the thirty-first of December, and have a new silk gown once a year—not she. She was waiting for the prince to come and array her in satins and laces and jewels. But she was not so foolish as to say this, even in whispers; and to all appearance she was sweet simplicity itself, guileless and unsophisticated as a child. For she thought the prince had come in the guise of William Allardeen.

As for Cindy, we have seen what her ambition was—to become an artist. Not

that the ambition had taken any very tangible form as yet. Fortune had given this girl, who had never seen more than two or three really fine pictures in her life, whose knowledge of the miracles of art was confined to a few engravings and photographs, an instinctive love of form and color, and a burning eagerness to reproduce them. The creative instinct was strong within her. She drew at first, as the birds sing, from pure love, with no thought of what might come of it. Up stairs in her own room there was one bureau drawer filled with pieces. Card-board, drawing-paper, and what not, were covered with pencillings, outlines — hints of the glowing life of the girl's heart and brain. There were crude attempts at color, too; here a flower, there a spray of grasses; now a child's face, and then a bird with folded wings. There were glimpses of sunset skies; and there was one stretch of blue sea, with a lone ship fading in the distance.

The coming of Mr. Allardeen to the house was a great event for this inexperienced girl. How good-looking he was! how noble! and what a pleasant expression sat on his face! As yet Lucinda had not spoken to him. On account of Susan's incapacity, she had to cook a great part of the dinner herself, send in the breakfast and the lunch — and, of course, as Mrs. Munro said to her, she could not be dressed to sit down with them. "My little niece, who is here to help the servants," Mrs. Munro carelessly said to her guest one day, when Cindy was seen in the garden picking gooseberries for dessert. "You knew, when you were a boy, that poor, mistaken Philip Gay, who threw up his business to go out after gold, and died. That's his daughter. She has not a farthing in the world, and I give her a home."

"Philip Gay!" repeated Mr. Allardeen. "What a nice fellow he was! I remember him well, and his kindness to me. One day I had been wicked and played truant from school, and he saved me from punishment."

That was all that was said. The young ladies were too fond of taking up Mr. Allardeen's attention themselves to allow him time to waste it on Cindy.

One day Laura came running to him with a pretty affectation of simplicity.

"Oh, Mr. Allardeen," she said, clasping her hands, "if you would only-teach me how to draw! I have wanted to learn all my life. That which the stupid people teach us here is not to be called drawing.

You should see my ridiculous efforts. Maybe," she went on, naively, dropping her eyelids till the long lashes swept her cheeks, "maybe I could appreciate your work better if I should try my hand at it as *you* could teach me, and learn some of its difficulties."

Mr. Allardeen laughed outright. The very simplicity of the request amused him. Genuine to the backbone himself, he never could suspect artfulness in others.

"Very well, Miss Laura. It is a bargain. In return, you shall be my guide to all that is beautiful and picturesque in this wild region."

"Oh, thank you," she cried. "I have been longing to show you some lovely scenery ever since you came, but feared you would think me intrusive if I offered. There is a beautiful spot a mile off, called the Sunset Beacon: if you like, Mr. Allardeen, we will go there this evening."

Poor Cindy! For the first time in her life she felt envy: she envied Elizabeth and Laura. This new hero of theirs was no less a hero to her. As for loving him, she would as soon have thought of loving a star, or the sun itself, so far did he seem removed from her. But this man was the embodiment of all her dreams. He did with easy, careless grace — the ease and grace of a god, it seemed to her — the very things that she longed to do. He conceived and executed those magnificent pictures that the world talked of and gazed at. He lived in the ideal life that she longed for and dreamt of. It was hard to be making tarts for dinner, while Laura, in the prettiest of morning dresses, wandered over the hills, or sought out fairy nooks with her new drawing-master.

One day Lucinda was bending over the stewpan on the fire, stirring a custard slowly round, and trying to recall the blithe content of her school-days, when Mr. Allardeen paused outside the open window, and glanced in. He stood in the shadow of the climbing honeysuckle, that made the window like a lovely picture in a green frame. Lucinda's cheeks were flushed, her hair lay back from her forehead, in her soft grey eyes there sat a troubled light, and she seemed thoroughly uncomfortable.

"It is very warm to-day, Miss Cinderella."

Cinderella! Even he, then, recognized her low position, and could give her no better name than this mocking one. The flush on her cheeks deepened to crimson; her eyelids were lowered to hide the tears in her eyes.

"Yes, it is," she humbly assented.

"What a shame!" he thought; as his quick eye took note of everything, and the young girl's tired face. "Do you like doing all this, Miss Cinderella?"

"I have to do it," she quietly said. "There's no one else."

"Where's Susan? I should think she might be over that hot fire, instead of you."

"Susan's in the back garden, picking the peas for dinner. My aunt tried to teach her to cook, but Susan could not learn. I caught it up directly," she said.

"And therefore you have to do it. I wish you could come into the garden and sit in those shady glades instead. That would be better, would it not, Miss Cinderella?"

"Oh, yes. But"—his tone was so unmistakably kind, so sympathizing, that she took courage to finish the sentence she had begun—"why do you call me Cinderella?"

Mr. Allardeen paused in surprise. "Is not Cinderella your name?"

She lifted the stewpan off the fire, for the custard was completed, and turned her tearful eyes on him, shaking her head.

"Your aunt and cousins call you Cinderella—and Cindy. I never supposed it was not your name."

"As I am here amidst the cooking and the saucepans they call me so. My name is Lucinda."

"What an awful shame!" thought Mr. Allardeen again. "And what beautiful eyes!—just like poor Gay's. I remember his."

"Well, you must pardon me for the error I fell into, Miss Lucinda. I am very sorry."

"It would not have mattered. Only I—I thought you did it to mock me."

"Mock you! No, I should certainly not do that. I hope I should not mock any one, least of all you. Do you know that I was well acquainted with your father?"

"Oh, were you!" she answered, her eyes smiling brightly through her wet eyelashes. "If he had but lived!"

"Ah!—if he had but lived! You would not be—doing what you are doing. Do you never come out in the garden for relief—say at the cool of the evening?"

"I used to: but just now there's a great deal to do. Sometimes after dusk I can snatch a few minutes there."

"Because I was thinking that if you did come I might have told you many little things about your father. He was my good friend when I was a boy."

"How I should like it! Yes, perhaps some evening I may be able to come out and listen to you."

"I hope you will. He was my friend; and I should like, if I may, to be yours. He, the man, was kind to me, the lad; I, a man now, would serve his child."

Mr. Allardeen lifted his hat, and walked away. He began to think he might be hindering her. What a terrible shame it was that so gentle, delicate a girl should have to spend her days at this rough, unfit work! he thought. "If poor Philip Gay, who was essentially a gentleman, and had loved to smooth the path of all around him, could but rise from his grave and witness it! And for them to call her Cinderella!"

From that day Mr. Allardeen sought opportunities to speak to the girl: many a time did he halt, as now, outside the open kitchen window, which looked to the side of the house and the more retired part of the garden. Once or twice he had found her outside at dusk, and they had paced the shrubbery together for five minutes, talking of her late father. The appellation, Cinderella, had grown into a jest between them: and she had not the least objection now to hear it from his lips: liked it, in fact.

One morning at breakfast an expedition was proposed to Darley Wood, a welcome place of sweet shade at a mile or two's distance. The Miss Palmers (neighbors' daughters) and their brothers would go with them; and Mr. Allardeen would take his sketch-book. Sandwiches and biscuits would supply the place of lunch, and they could stay out all day if they chose. Presently Mr. Allardeen took the broad path that led past the kitchen, and halted at the open window.

"Cinderella," said he, in a low, pleasant, laughing tone as he lingered over the word, and leaned his head in to see her cutting bread-and-butter for the sandwiches, in her fresh and pretty cotton dress, with the blue bow at her neck. "We are not going to the prince's ball, but we are going to spend the day in Darley Wood. Those cool, green, silent shades will be delightful in such heat as this. Can you not go with us?"

Ah, if she could! she longed for it unutterably. Mr. Allardeen did not see the hot tears that sprung to her eyes, for she turned round to conceal them.

"Thank you: I wish I could," she answered quietly.

"It will be more agreeable there than in

your kitchen. Shall I ask Mrs. Munro to let you come?"

"No, thank you; it would be of no use. I could not go to-day."

"Well, I should have thought this would be an excellent opportunity, with all of us away; there will be no meals to prepare."

Lucinda shook her head. "Indeed it is not convenient to-day," she said with a smile. "Some other time, perhaps."

Why should she tell him that there was the day's regular work to do, and that Susan was so useless? That there were also raspberries to be picked over and preserved and a cake and tarts to make, and the late dinner to be prepared? What could he understand about it? The worst of it was these things had never seemed so burdensome to her before, never so distasteful. The cool, fresh green of the woods and valleys, and to watch him sketching—oh, what a contrast!

Wishing her good morning, Mr. Allardeen turned away. As soon as he was out of sight she sat down and burst into a passionate flood of tears. Cinderella! Yes; she was only Cinderella, and never would be anything else. She had not a cross stepmother; she had no cruel sisters. But her aunt kept her to this lowering work; and her cousins danced and dressed, and could spend their hot days in the green dells in idleness, Mr. Allardeen their companion. Alas! she had no fairy godmother to come to her rescue as the other Cinderella had.

Drying her eyes, she went on with her work. Setting to with a will Lucinda got it done quickly, so as to obtain an hour in the afternoon for herself. Once amid her little paintings and sketches, she was happy. She would have been quite happy if she might but have shared in the benefit of Mr. Allardeen's instruction, as Laura daily did. But of course it was not to be thought of. He knew nothing about her being able to draw; and she would have had no time to take his instructions, had he been willing to give them.

As to these lessons of Laura's, all the house felt some curiosity in regard to them. Elizabeth openly declared that at school Laura had displayed no more talent for drawing than she herself did for music; and, as everybody knew, Elizabeth did not know one note from another; and Lucinda did think it queer that a talent should be developed suddenly and spontaneously. At school Laura could not draw a map, or the simplest figure in geometry; at music she was clever.

Laura took her lessons from Mr. Allardeen in quite an unusual manner. She would not, and did not, draw before him; she was too shy; but she watched him draw sketches himself and listened as he showed her how she should touch this, fill in that. Every third or fourth morning Laura would come into his sitting-room with her carefully locked portfolio, unlock it, and take out a sketch for his inspection that she had just completed. Over and over again Mr. Allardeen expressed himself astonished at the undoubted talent displayed: and would praise it highly, while Laura listened with shy, downcast eyes, and the softest blush on her white-rose cheeks.

"I cannot understand it, Laura," he more than once observed. "Talent—nay, I may say genius, for it is nothing less,—such as you display, ought to have found its vent earlier. When I was a little lad I used to do crude things with my pencil; could not help doing them; and I should have expected you to do the same. True genius cannot be kept in."

"I was not well—taught—and I grew discouraged," murmured Laura. "But for you, I might never have found it out."

He shook his head, unconvinced. As he said, he could not understand it.

"It is a singular thing, this new talent of Laura's for drawing!" observed Elizabeth one afternoon that she had bade Lucinda come to her room and give her hear a brush. "She never had a talent for anything, except making the most of her beauty and dressing herself to advantage. Take care, Cindy, you are hurting me."

"Have you seen her sketches?" asked Cindy. "I wish she would show them to me! she knows how I delight in seeing good drawings."

"Not I. She won't show them to anybody. It's all put on, her modesty: just to look well in William Allardeen's eyes. But he does praise her work, and no mistake: he says it is wonderful, admirable. There, that will do, Cindy: you've brushed long enough. And now get my peach muslin, and try and pull out the bows a bit."

The weeks went on. A grand picnic was organized for a distance; some twenty people to share in it. Preparations were made in the shape of good dishes, Mrs. Munro's share of them being chiefly performed by Lucinda: the day arrived, and they started an hour after breakfast. Mr. Allardeen had ventured to say something

about poor Miss Gay's making one of the party; but Mrs. Munro assured him that she could not be spared.

As desired by her aunt, Lucinda took the opportunity to put Mr. Allardeen's sitting-room to rights, and give it a thorough dusting, when, to her excessive surprise, Mr. Allardeen entered.

"Why!" she exclaimed, in her astonishment. "Is it *you*? What have you come back for?" He laughed.

"To catch you in the midst of your sins, Miss Cinderella. What were you doing in my room?"

"Putting it straight," she answered. "My aunt told me to do it."

"Then you will have the goodness not to do it any more: and to put that duster out of your hand. I cannot allow young ladies to go down on their knees for me."

She blushed a good deal. Her heart was beating violently. Taking the duster with her, she was turning to leave the room, when her eye was caught by a small exquisite water-color drawing, which Mr. Allardeen inadvertently disclosed to view in moving some papers on a side table.

"Oh, how beautiful!" was her involuntary exclamation. "May I just look at it?"

He put it into her hands, and watched the delighted expression of her countenance as she examined it in silence.

"You are fond of drawings!" he said.

Fond! That was not the word for it. By the few remarks she made, he soon found she understood art fairly well, and that it was her chief enjoyment in life. He said no more, however, then, and Lucinda left the room.

The cause of his return was very simple: calling at the post-office (to which his letters were sometimes addressed) as he went with the picnic party through the town, he found an important letter waiting for him, which required an immediate answer. To the dismay of some of the party, for Mr. Allardeen was a general favorite, he turned back home to write it.

"But you won't be long, Mr. Allardeen?" cried Laura. "We had better wait here for you?"

"Certainly not. Your carriages can go on. I will charter a horse and come after you."

"Be sure and make him go fast," called out Laura, innocently silly, as usual.

Mr. Allardeen wrote his answer, and took it to the post-office. Again Lucinda supposed he had left for the day. She was snatching a few minutes' rest under

the shady trees in the pleasant morning air, when he came striding up the path.

"Are you—not going to join them?" questioned Lucinda timidly.

"I think not. The man at the inn has no horse that I particularly care to mount."

The answer brought her some sudden perplexity: if Mr. Allardeen stayed at home, he would want lunch and dinner. What was to be done? Nothing had been ordered. She and Susan had both thought they were free from such cares for the day.

"Would you like to come in and look at my portfolio of drawings, Miss Lucinda?"

"Oh, if I might!" she exclaimed, her eyes sparkling and her cheeks flushed.

They went in through the glass doors. He opened his portfolio and carelessly exposed its treasures. Lucinda stood entranced: for how long, she hardly knew. She had an artist's eye: the very few remarks she made told him that.

"Here's one of rather more pretension," he said, throwing open the door of a small closet; in which, on a shelf, stood a covered drawing, leaning against the wall. "Did you look at it when you were here this morning?"

"Indeed, no. I should not open the doors of your private places."

"This is no Bluebeard's closet. Look there."

Putting up the tissue paper which covered it, the drawing, a water-color, stood out to view.

It was a quaint old kitchen; dim, shadowy, lighted only by the embers on the hearth. Leaning against the stone jamb of the great fire-place, with a weary look upon her young face, and her hands clasped despondingly, stood an unmistakable Cinderella.

It was not very light, and Lucinda took in nothing at first but a general idea of the power and pathos of the picture, holding her breath for very delight, while Mr. Allardeen watched her eagerly. Her eye wandered over the canvas, grasping detail after detail; then to the name at the top, "Cinderella," then to the girl's drooping figure. After gazing silently, she uttered a faint exclamation, while the red blood fled from her cheeks, and she burst into tears. Cinderella's face was her own face: *she* was the Cinderella.

"Have I vexed you?" he asked. "I did not mean to. If I have you must forgive me."

"No, no, I am not vexed," she answered, subduing her tears. "Just when I saw her standing there, I felt a great pity, and

thought, 'Oh, she has to be in the kitchen as I have.' And the next moment I saw it was myself, and—and—it is nothing, Mr. Allardeen, but life does seem hard at times."

"You would rather pass your days in an artist's studio than in custard-making, Miss Lucinda."

"Please don't talk of it. Oh!" she exclaimed, starting, as the little clock on the mantel-piece struck one. "I did not think it was half so late."

"And what if it is? Where are you going? You have not seen all the drawings."

"But there's lunch to be thought of, and dinner——"

"Dinner be dispensed with," he interrupted laughing. "Lunch also. Confess, now—you were not going to prepare dinner for yourself."

"No, there's cold meat for me and Susan. But now you have come home——"

"Now I have come I shall eat cold meat too. And if you don't like that, Miss Lucinda, I'll touch nothing but bread-and-butter."

"But my aunt will be so angry with me!"

"Leave her anger to me."

That was a red-letter day for Lucinda. She would never in all her life forget it. After revelling amidst the sketches, Mr. Allardeen made her sit out under the trees, now reading snatches of poetry to her, now talking to her unrestrainedly in his pleasant voice. By the time evening came, Lucinda seemed to have known him for years.

But she had not had the courage to tell him that she drew herself. She longed to tell him; and two or three times the words had risen to the tip of her tongue; only to be suppressed.

On the afternoon of the day following this, Mr. Allardeen sat in the large arbor, reading letters that the day mail had brought him. Leaning back comfortably in the rustic summer-house, a cigar in his mouth, he folded up his letters, and then took up the newly arrived *Art Journal*. Hearing footsteps approach, he looked up and saw Laura advancing, portfolio in hand.

"I don't expect you want to see me one bit," she said, throwing back her head childishly and her pretty hair. "Especially just when you have your letters. But I came nevertheless. I do so want you to tell me what is the trouble with this sketch. I can't get it to suit me. Oh,

Mr. Allardeen," and she laid her fingers upon the tip of his coat-sleeve, appealingly, "what shall I do when you go away, and I have no one to help me? You have added so much to my life!"

He made no reply—ungallant fellow that he was—as he threw away his cigar, took the little sketch, or design, from her hand, and glanced at it carelessly. But in a moment he lost his listless air, pushed back the hair from his forehead, laid the bit of drawing paper on the table before him, and bent over it.

"This design is remarkable, very remarkable for the work of a beginner, Laura," he said, at length. "You are a perpetual surprise to me. You have such a way of getting at the heart of things. What do you mean by this sketch? Put your thought into words."

He was surprised—puzzled, for he thought the drawing wonderful. No man could be blind to Laura's beauty; William Allardeen had enjoyed it, as he enjoyed a lovely picture. But he had soon discovered, or thought he had, that with all her little gushes of sentiment, her artless candor, she had no more soul than the Venus de' Medici. A woman without a soul could not make these sketches, as he believed. Those she brought to him, day after day, betrayed a power of thought, a depth of feeling and insight, quite beyond his comprehension. The execution was often faulty—but the power was there undeniably. And this was the best of them all.

"You meant something by this," he went on, as she did not speak. "You were not simply making a picture. I think I read your idea. But tell me what it was?"

A step sounded on the gravel-walk: Lucinda going by to pick some parsley. Laura hastily gathered up her papers; she never would let any one see them, save Mr. Allardeen: but by some means this one sketch fell, and the wind wafted it to Lucinda's feet.

"Don't touch it, don't touch it," shrieked Laura. But Lucinda, meaning no harm, was too quick for her, and had picked it up.

"Why, this is mine!" cried Lucinda in astonishment, her eye kindling with a sudden light. "Where did you find it, Laura? You must have got it from my room. And what right have you to show my things to Mr. Allardeen?"

"It is not yours, it is mine," retorted Laura, who had turned as white as a sheet: while Mr. Allardeen, singularly in-

terested, stood at the door and looked on. "*Mine*. I drew it myself. How dare you assert ridiculous falsehoods?"

Lucinda colored painfully. She had drawn part of that sketch yesterday at sunset, and filled it in at dawn this morning. But she would not betray Laura.

"Let it pass, then," she said, and would have turned away to get the parsley.

But Mr. Allardeen stopped her, laying his hand upon the portfolio.

"This can hardly be a mistake," he said, gently. "It is better to have an understanding on the spot. Do you say this drawing is yours, Miss Gay: that you did it?"

Lucinda looked at Laura imploringly, but the latter stood sullen and silent as a statue.

"I ask whether you did it, Miss Gay. Did you do this?—and this?" taking others from the portfolio. "Speak out."

Lucinda took the sketch from his hand. Down in one corner, following the outline of a plantain leaf, she pointed to certain minute characters. Looking attentively, he read the name "*Cinderella*." Turning, he looked at Laura.

"Some mistake," she faltered, hands and lips alike trembling; "I must have taken up Cindy's instead of my own." Yes, she had taken Cindy's sketches out of her room and exhibited them as her own.

What passed in the next few minutes Lucinda could hardly ever recall. It was like a bewildering dream. Laura had disappeared, leaving the portfolio: on every sketch within it was the private mark, "*Cinderella*." In her own sweet humility she would not have dared to show them to Mr. Allardeen. But now he had seen them, had praised them, had spoken the kindest, dearest words of hope and encouragement. He had recognized in her, partly untaught, untrained as she was, something akin to his own genius. Was it any wonder that at last she laid her head on the table and cried, partly with joy, partly at the discomfort touching Laura. William Allardeen laid his hand gently on her head.

"Don't cry, *Cinderella*. You have surely found your fairy godmother."

Whether she had found her fairy godmother or not, she had found *him*.

"Which will you do, my dear one," he whispered. "Stay in the kitchen here?—or come with me to live at an artist's studio?"

"I—I daresay it was a mistake," she

pleaded, trembling and blushing. "Please don't tell of Laura."

"Never mind Laura; we can do without her. I want you, Lucinda. Ah, my dear one, the first hour I saw you, with your father's wonderful eyes, my heart went out to you. Will you come to me to my studio, and be my dear wife?—my very own little *Cinderella*?"

Cinderella burst into tears, and hid her face in his arms. By-and-by, Susan came clattering down to see what had become of the parsley.

"Well, and I declare I'm glad of it!" honestly spoke Mrs. Munro, when matters were disclosed to her. "Though I believe Laura did look upon him as sure to be hers, I'm glad of it. It's a first-rate match for Cindy. And I'm afraid, what with the kitchen and other things, life here was rather hard for her at times."

From The Quarterly Review.

THE LIFE OF THE PRINCE CONSORT.*

THE second portion of the "*Narrative of the Life of the Prince Consort*" fulfils the rich promise of the first, and confirms the singular felicity which secured the choice of a biographer so well qualified to do justice to a theme, of all others the most difficult to treat with equal freedom and discretion.

Rare, indeed, are the qualifications indispensable to the writer of such a life as this; of a prince who but yesterday was a living presence in our midst; whose words and actions were a part of contemporary English and European history; who was the beloved consort, the intimate confidential counsellor of a reigning queen. Not only should the biographer bring to his work a wide and various culture, a trained comprehension of public affairs, a keen historic sense, a constant tact, discrimination, and discernment, a perfectly disinterested and dispassionate habit of mind; he should know how to arrange and set in order his narrative with a due regard to proportion, and, above all, he should abound in sincerity and simplicity, and let the life he is portraying tell as much as possible its own tale without superfluous comment.

These conditions of success in a most arduous and anxious task are, it seems to

* *Life of His Royal Highness the Prince Consort*. By Theodore Martin, C.B. Vol. II. London, 1876.

us, fully satisfied by Mr. Theodore Martin, who, in this second volume, combines, to a larger extent than in the preceding chapters, the historian with the biographer, equally unobtrusive and unembarrassed in either capacity; whether in recounting the events of a year of Continental revolutions and reactions, or in the exposition of questions and measures of domestic policy, always perspicuous, accurate, and succinct. In the occasional glimpses which the "Life" affords of the home and family life of the prince, it would not have been difficult for a biographer less sure of his own good taste and feeling to have marred the charm of such passages by misplaced emphasis. Mr. Martin's discretion is never at fault, and he has used the materials unreservedly confided to him by the queen in a manner that leaves nothing to be desired by the most curious reader or regretted by the most fastidious.

In the concluding pages of the first volume the Revolution of February, with the sudden overthrow of the dynasty and government of Louis Philippe, and the crowd of hurrying consequences of that catastrophe, found the prince consort less astonished, perhaps, than the victims or even the victors of those disastrous days. All these movements were watched by him with the closest and most vigilant attention, and, more especially as regarded Germany, with the most anxious interest. In the first volume of the "Life" we have seen by his memorandum on German affairs how clearly he had calculated the means and methods by which alone violent changes might be prevented, the national institutions re-invigorated and reformed, and the common cause of liberty and unity be advanced, without spoliation or disturbance, if the king of Prussia had courage and constancy enough to lead the way. Unhappily, that element in the calculation was wanting; the king was a fervid and irresolute sentimentalist, alternately caressing a maddened populace, and repudiating the aspirations of an enthusiastic people. Prince Albert and his excellent old friend and teacher, Baron Stockmar, both desired to see the fatherland in the enjoyment of a substantial national unity, and of public liberties; but the veteran statesman twitted his pupil with having too much faith in the dynastic evolution of constitutional reform, and with looking at German affairs from a British point of view. Both, however, discerned in Austrian jealousy the most dangerous enemy to German aspirations, and in Prussia the natural and rightful champion of the German cause.

With regard to Italy, we have seen by the prince's memorandum on Lord Minto's strange and questionable mission in 1847, how firm a friend he was to the cause of Italian independence, how clearly he discerned the dangers and difficulties besetting it, and how decidedly he urged that England should insist upon the right of every State to manage its own affairs without the interference of any foreign power. In all the prince's counsels we discover the constant principles of justice and moderation, the conviction that national liberties must be organically developed, not artificially imported or imposed; the abhorrence of all despotisms, whether of monarchs or of mobs. Such, indeed, were the principles he had been taught by Baron Stockmar, whose somewhat grim humor and doctoral stiffness of style are the only characteristics of an almost instinctive aptitude for statesmanship, which remind us that he was not an Englishman born. In his political ideas and sympathies the baron was, in all but a certain superiority of culture, and a tendency to clothe his principles in abstractions, as thoroughly English as the most loyal and devoted subject of the British Crown.

There were not wanting in those days in the metropolis and in the great provincial centres needy and unscrupulous agitators, harebrained enthusiasts, miserable plagiarists of the Parisian revolutionary heroes, who did their little worst to provoke disturbance and disorder in the streets. But this contemptible rabble was speedily put down by the police, and the noxious demagogues, who called themselves "the People," were rendered innocuous by ridicule.

Our little riots here [writes the queen to King Leopold] are mere nothings, and the feeling here is good." The same letter wishes the king joy "of the continued satisfactory behavior of my friends the good Belgians; but," adds her Majesty, "what an extraordinary state of things everywhere! *Je ne sais plus où je suis*, and I could almost fancy we have gone back into the last century. But I also feel that one must not be nervous or alarmed at these moments, but be of good cheer, and muster up courage to meet all the difficulties.

The easy suppression of riots in Glasgow, Edinburgh, Newcastle, Manchester, and other places, gave the government strength and confidence in dealing with the memorable Chartist insurrection of the 10th of April. That day of dupes has never been better described than by Mr. Martin. While revolutionary sympathizers over the water were convinced

that before night Great Britain would be a republic, poor Feargus O'Connor's processionists, reduced from half a million to eight thousand, were "finding their way back to their homes" (from Kennington Common), "in broken order, as best they might," and their monster petition, reduced from 5,700,000 to 1,975,496 signatures of which a large portion were fictitious, was being conveyed to the House of Commons "by back streets in three common cabs." Some 170,000 special constables had been put to inconvenience by the loss of a day's business or pleasure, but the British constitution was saved without firing a shot, and not a soldier or a piece of artillery was visible in the streets. Nevertheless, the danger was a real one; and though, as Mr. Martin acutely remarks, "when the day had passed, people were half-disposed to smile at their own fears, the relief with which the tidings were received throughout the kingdom showed how great was the alarm which had been generally felt."

The queen, yielding to the representations of her ministers that it was better the court should be out of London on the 10th, had retired with Prince Albert to Osborne two days before, and just three weeks after the birth of the princess Louise. On the 11th she was able to write to King Leopold:—

"Thank God! The Chartist meeting and procession have turned out a complete failure. The loyalty of the people at large has been very striking, and their indignation at their peace being interfered with by such wanton and worthless men, immense."

The same day a letter from the prince bore the welcome news to Baron Stockmar. "We," he writes, "had our revolution yesterday, and it ended in smoke. London turned out some hundreds of special constables; the troops were kept out of sight, to prevent the possibility of a collision, and the law has remained triumphant. I hope this will read with advantage on the Continent. Ireland still looks dangerous."

"What a glorious day was yesterday for England!" were the prince's words, in a letter of the same date to his secretary, Colonel (afterwards Sir Charles) Phipps. "How mightily will this tell all over the world!"

The state of Ireland was far less reassuring. Crime and sedition were stimulated by misery and famine, of which ecclesiastical and democratic incendiaries did not fail to take advantage. But here the firmness of authorities was sufficient with the aid of the exceptional powers granted by an act of Parliament, and the usual discords of Irish factions, to silence and disperse the leading fomenters of dis-

affection, and to terminate Mr. Smith O'Brien's brilliant attempt at a rebellion in the celebrated cabbage-garden. In both countries the triumph of law and order was complete, but at the cost of not a little suffering and distress among those classes of the population whose precarious fortunes are the first to feel the bad effects of public uneasiness and turbulence. The prince's letters to his old friend at Coburg are full of grave reflections on the anarchy abroad and the depression of commerce and industry at home; but his faith in the security of English institutions was never for an instant shaken. At Osborne he finds relief from public cares in his favorite occupations of farming and gardening; and, in Mr. Martin's words, "grave and earnest as the general current of the prince's thoughts at this time was, the admirable gift of humor which never failed him, no less than the wise cheerfulness (to use Wordsworth's happy phrase) of a mind that had disciplined itself to take a broad and patient view of the vicissitudes of life, stood him in excellent stead, and helped him to sustain the spirits of her Majesty, and of others about him, upon whom they acted as a salutary tonic." We hear of him in the leisure moments snatched from incessant and multifarious occupations of a sterner sort, adapting the music of a chorale of his own composition to the words of the hymn now well known as the Gotha tune, for the christening of the princess Louise. But in the hearts of royal personages public anxieties and private sorrows are often intermingled, and amidst the court ceremonies and gaieties of an unusually brilliant London season, the pressure of saddening thoughts was often painful.

The prince's sympathy with the laboring classes, and his solicitude for the improvement of their condition, were manifested at this period in a speech delivered from the chair of a public meeting held by the society of which he was the president. Some members of the government were apprehensive of an unseemly demonstration by the rabid demagogues who were daily inveighing against monarchy. Lord John Russell appears to have sent the prince some inflammatory trash to read, and in acknowledging its receipt the prince wrote:—

The book which you sent me certainly shows great disposition on the part of some mischievous folks to attack the royal family; but this rather furnishes me with one reason more for attending the meeting, and showing to those who are thus to be misguided, that the

royal family are not merely living upon the earnings of the people (as these publications try to represent) without caring for the poor laborers, but that they are anxious about their welfare, and ready to co-operate in any scheme for the amelioration of their condition. We may possess these feelings, and yet the mass of the people may be ignorant of it, because they have never heard it expressed to them, or seen any tangible proof of it.

In this generous spirit he presided over the meeting, and delivered an address of which it may be said, without flattery, as of so many other subsequent utterances from the same lips, that it anticipated and summed up in a few brief, energetic, penetrating sentences all that has since been said or done in the same wise direction and for the same good cause.

We must be content to recommend as a model of clear and concise narration Mr. Martin's chapters on the revolutions in Germany at this period, which occupied, as may be supposed, no inconsiderable place in the prince's thoughts and in his correspondence with Baron Stockmar. We have already referred to a certain divergence in the views of the pupil and the preceptor, not as to the objects to be sought for, but as to the means and methods of their attainment. Substantially the prince and the baron were in accord, whether as regarded the National Parliament at Frankfurt, or the struggle for supremacy between Prussia and Austria, and the obstacles presented by the latter power to the unity and independence of Germany. Time has disposed of these questions, if not in the manner, with the results which the far-sighted Stockmar would probably have predicted, and certainly desired.

In the midst of all these convulsions, the confirmed stability of the Belgian kingdom was a source of comfort to the queen and the prince. "Belgium," the queen wrote to King Leopold, "is a bright star in the midst of dark clouds. It makes us all very happy:—"

It is easy to conceive how welcome to the queen and prince was the assurance that one kingdom had remained unshaken amid the general upheaval, and that the kingdom of one who was endeared to them by so many ties. What they had endured since the outburst of the revolutionary tempest in Paris will be best shown by a few words from a letter of her Majesty on the 6th of March to Baron Stockmar: "I am quite well—indeed particularly so, though God knows we have had since the 25th enough for a whole life,—anxiety, sorrow, excitement, in short, I feel as if we had jumped over thirty years' experience at once.

The whole face of Europe is changed, and I feel as if I lived in a dream."

Besides the anxieties, specially due to their position, which were occasioned to the queen and prince by the course of public events abroad, they had to suffer much from natural sympathy with their relatives, to whom these events had brought misery and disaster. As one by one the members of the French royal family arrived to claim their sheltering kindness, the terrible contrast to the circumstances under which an affectionate intimacy with them had grown up could not fail to excite deep emotion. "You know," writes the queen, in the letter to Baron Stockmar just cited, "my love for the family; you know how I longed to get on better terms with them . . . and you said, 'Time will alone, but will certainly bring it about.' Little did I dream that this would be the way we should meet again, and see each other all in the most friendly way. That the Duchess de Montpensier, about whom we have been quarrelling for the last year and a half, should be here as a fugitive, and dressed in the clothes I sent her, and should come to thank me for my kindness, is a reverse of fortune which no novelist would devise, and upon which one could moralize forever."

The habit of unreasonable suspicion, so often attributed to French republicans, is not, we are ashamed to own, peculiar to our neighbors. The following passage is but one of many similar references in the course of this volume to the base insinuations whispered in society, and more or less coarsely suggested at public meetings, and even in respectable journals representing more than one party in the State, and credited with some sort of inspiration from politicians of the rank of statesmen, with which our royal house was assailed. That robustness of which Englishmen are so proud is apt to bear an unpleasant resemblance to brutality, and there is a certain acidity in British humor which occasionally seeks a relief from dulness in the excitement of slander for slander's sake, and not, as in France, for the sake of a bitter epigram. Prince Albert endured all this idle and ignorant malice with perfect equanimity, and when a joke against himself was obviously without malice, he enjoyed it.

There were some who were disposed to infer from the personal kindness shown by the queen and prince to the Orleans family, that the establishment of a republic in France was regarded at our court with active hostility. Speaking on the 28th of February, Lord John Russell had anticipated such mistaken surmises by stating, that while it was not the intention of the government to interfere in any way whatever with any settlement France might think proper to make with respect to

her own government, he did not believe "England would refuse to perform any of those sacred duties of hospitality which she has performed at all times to the vanquished whoever they were, whether of extreme royalist opinions, of moderate opinions, or of extreme liberal opinions. Those duties of hospitality," he added, amid the cheers of the House, "have made this country the asylum for the unfortunate, and I for one will never consent that we should neglect them." But even the jealous suspicions of the French provisional government, which took the shape, a few days afterwards, of an official complaint on account of the kindness shown in England to the ex-royal family, might have been quieted, could they have known in what terms the queen had written to King Leopold on the 1st of March, three days before Louis Philippe reached the English coast.

About the king and queen we still know nothing. . . . We do everything we can for the poor family, who are indeed sorely to be pitied. But you will naturally understand that we cannot make *cause commune* with them, and cannot take a hostile position to the new state of things in France. We leave them alone; but if a government which has the approbation of the country be formed, we shall feel it necessary to recognize it in order to pin them down to maintain peace and the existing treaties, which is of the greatest importance. It will not be pleasant to do this, but the public good and the peace of Europe go before one's personal feelings.

The attention of readers of this volume will doubtless be arrested by the chapters concerning Lord Palmerston's removal from office after the *coup d'état*; the International Exhibition of 1851, of which the conception, the design, and the execution were worked out by the prince in the face of difficulties which would have paralyzed a weaker will; the preliminaries of the Crimean war, the question of the commandership-in-chief of the army and the development of the national defences, and the position of the prince himself as the nearest counsellor of the crown. Besides these salient topics, there are the deliberate opinions of the prince on such still burning questions as Church government and discipline; on the position of the bishops in the House of Lords; on the Ecclesiastical Titles Bill, recorded from time to time in those memoranda, in which it was the prince's habit to sum up in a few terse, closely-reasoned sentences, for the consideration of the responsible ministers of the crown, his own careful conclusions on all the most important questions of the hour, and on those cases of policy which were ripening for decision in the councils of the State. We are

persuaded that every reader will be struck, as we have been, by the maturity of wisdom and the calm vigor of expression which distinguish every one of these remarkable documents, and give them quite a monumental value now that their author has passed away. Some faint idea of the public work accomplished by the prince may be gathered from the fact related, on the authority of Lord Palmerston, in a letter (10th June, 1849) from Lord John Russell to the prince, that during the year 1848 no less than twenty-eight thousand despatches were received or sent out at the Foreign Office. "These twenty-eight thousand despatches in the year," the prince says, in his reply, "Lord Palmerston must recollect come to you and to the queen, as well as to himself." Those who entertain the notion that the head of the state has no duties to fulfil, or business to transact more laborious than signing a name, or presiding over court festivities and state ceremonies, will be shocked by this discovery.

With regard to the affair of Lord Palmerston's removal from the Foreign Office, in the chapter which deals with this subject, Mr. Martin has justified the fulness and particularity with which he has treated a painful episode. Among the felicities of Lord Palmerston's career, no one who desires to cultivate as they deserve the memory and renown of that statesman's services would be disposed to reckon the busy band of flatterers and partisans, who served as camp-followers among his troops of friends while he lived, or the more disinterested, but not more discreet or more excusable, panegyrists who have thought to minister to his glory by indiscreet and inexact representations of facts which will not bear the light of an impartial scrutiny. Like many greater men, he had faults and failings, which were often only exaggerations and perversions of his better qualities; but to paint them in heroic colors, as if waywardness were independence of character, and arrogant self-will an impatient and intrepid patriotism, is but a sorry tribute of respect to a well-earned fame.

Although the enforced resignation of the minister of foreign affairs actually occurred after the *coup d'état* of December 1851, and was among the minor consequences of that event, it dates, at least in its antecedents, from the debates in Parliament in March, 1848, on the foreign minister's despatch to the minister at Madrid, urging the queen of Spain to take warning by the expulsion of the Orleans dynasty from France, and to strengthen

her executive government by widening its bases, and calling the men on whom the Liberal party had confidence to her councils. The effect of this despatch was as striking as Lord Palmerston could have expected, but hardly so satisfactory as he might have desired. The British minister received his passports, with a peremptory order to quit the kingdom within forty-eight hours. The House of Commons was not likely in such a case to accept the humiliation by acknowledging that it was deserved; but the foreign secretary's despatch was condemned by all save a few personal partisans, and by none more emphatically than by Sir Robert Peel, whose last words in Parliament two years after were a solemn and eloquent protest against Lord Palmerston's treatment of the case of the notorious Don Pacifico, when he sent a whole British fleet to back the extortionate demands of that enterprising Jew of Gibraltar, and narrowly escaped a rupture with France and Russia, by bringing into contempt the friendly mediation of the former of those co-protectors of the Hellenic kingdom, and ignoring the latter altogether. On both these occasions Lord Palmerston escaped the censure of the House of Commons by the aid of a party majority, and was condemned by the honest and independent opinion of the country.

In the letters to his brother, which have been published by his biographer, Lord Palmerston describes the attack upon his policy in the Pacifico affair by the most eminent statesmen of both parties in Parliament, as "a shot fired by a foreign conspiracy, aided and abetted by a domestic intrigue." Such, too, was the language of his advocates in the press; and, after a lapse of a quarter of a century, his biographer accepts and adopts the extravagant absurdity as an historical revelation. Mr. Martin's authoritative statement of the whole case is supported by the testimony of documents of unimpeachable authenticity, showing, amongst other things, that in April, 1850, Lord John Russell had communicated to the queen his determination "no longer to remain in office with Lord Palmerston as foreign secretary;" and had only been prevented from carrying this resolution into effect by the duty of standing by a colleague, and maintaining the constitutional principle of the responsibility of the whole cabinet, when the policy of a single minister was impugned in Parliament.

The despatch of the 16th December, 1851, was only the last of many similar indiscretions. In his letter, announcing the

painful conclusion "that the conduct of foreign affairs can no longer be left in your hands with advantage to the country," Lord John Russell, while expressing his concurrence in the foreign policy of which Lord Palmerston had been the adviser, and his admiration of the energy and ability with which it had been carried into effect, complained of the "misunderstandings perpetually renewed, and violations of prudence and decorum too frequently repeated," which had "marred the effect of that policy." Lord Palmerston's apology for the conversation with Count Walewski respecting the *coup d'état*, and for sending the despatch to Lord Normanby which had never been seen nor sanctioned by the queen, was that the conversation was unofficial, and the despatch a mere answer to a question which regarded himself personally. Nothing then remained but to submit the whole correspondence to the queen, and to ask her Majesty to appoint a successor to Lord Palmerston in the Foreign Office. After a careful and attentive perusal of the correspondence, the queen signified her acceptance of Lord Palmerston's resignation. The following letter from the prince to Lord John Russell disposes of the ridiculous insinuations to which we have referred:—

Windsor Castle, 20th December, 1851.

MY DEAR LORD JOHN.—You will readily imagine, that the news of the sudden termination of your difference with Lord Palmerston has taken us much by surprise, as we were wont to see such differences terminate in his carrying his points, and leaving the defence of them to his colleagues, and the discredit to the queen.

It was quite clear to the queen, that we were entering upon most dangerous times, in which military despotism and red republicanism will for some time be the only powers on the Continent, to both of which the constitutional monarchy of England will be equally hateful. That the calm influence of our institutions, however, should succeed in assuaging the contest abroad must be the anxious wish of every Englishman, and of every friend of liberty and progressive civilization. This influence has been rendered null by Lord Palmerston's personal manner of conducting the foreign affairs, and by the universal hatred which he has excited on the Continent. That you could hope to control him has long been doubted by us, and its impossibility is clearly proved by the last proceedings. I can therefore only congratulate you, that the opportunity of the rupture should have been one in which all the right is on your side.

The distinction which Lord Palmerston tries to establish between his personal and his official acts is perfectly untenable. However

much you may attempt such a distinction in theory, in practice it becomes impossible. Moreover, if the expression of an opinion is in harmony with the line of policy of a government, it may be given officially; if differing, it must mislead, as it derives its importance only as coming from the minister, and not from the private individual.

The Cabinet condemned Lord Palmerston without a dissentient voice, and the course taken by the prime minister was distinctly approved by both Lord Lansdowne and the Duke of Wellington. A noteworthy incident in this disagreeable affair is the letter from Baron Brunnow, the Russian ambassador, to Lord John Russell, offering him his public assurance that the change in the Foreign Office had nothing to do with any representations of foreign diplomatists. This officious communication was, of course, courteously acknowledged by the prime minister; but her Majesty, who, as Mr. Martin remarks, was under no such obligation of official courtesy, "gave expression in the following terms to the feeling which the assumption on which the baron's letter was based might have been expected to arouse:—"

Baron Brunnow's letter is in fact very presuming, as it insinuates the possibility of changes of government in this country taking place at the instigation of foreign ministers, and the queen is glad that Lord John gave him a dignified answer.

When Parliament met on the 3rd of February, 1852, Lord John Russell stated at length the reasons which had "made it impossible for him to act any longer with his noble friend in that situation in which he had shown such distinguished ability," and took occasion to read the queen's memorandum of the 12th of August, 1850. The effect was overwhelming, and the long vindication which Lord Palmerston had prepared was, as he himself afterwards avowed to one of his supporters, "all upset." His biographer describes the reading of the queen's memorandum as an unfair surprise. It was so little a surprise, that Lord John Russell had given notice to Lord Palmerston of his intention to read it; but, "somehow," said Lord Palmerston afterwards, on accounting for his failure, "I did not believe it." Although his impetuous friends in society and in the public journals broadly hinted at the time that the prince consort had been the chief instrument of his fall, "in after years no man spoke more warmly of the prince, or was readier to acknowledge his services to the country." In proof of this Mr. Martin prints a letter addressed to himself

by Colonel Kemeys Tynte, formerly member for Bridgewater, and an intimate personal friend of Lord Palmerston's:—

Shortly after the return of her Majesty and his Royal Highness from their visit to the emperor and empress of the French [in August, 1855], I called one morning upon Lord Palmerston at Cambridge House. I congratulated him upon the, in every respect, very successful visit of her Majesty and the prince to France, remarking, "what an extraordinary man the emperor was." "Yes," replied Lord Palmerston, "he is, but we have a far greater and more extraordinary man nearer home." Lord Palmerston paused, and I said, "The prince consort?" "Certainly," he replied. "The prince would not consider it right to have obtained a throne as the emperor has done; but in regard to the possession of the soundest judgment, the highest intellect, and the most exalted qualities of mind, he is far superior to the emperor. Till my present position"—he was then premier—"gave me so many opportunities of seeing his Royal Highness, I had no idea of his possessing such eminent qualities as he has, and how fortunate it has been for the country that the queen married such a prince." These are as nearly as possible Lord Palmerston's words, which made a deep impression upon me.

After reading this we cannot but agree with Mr. Martin that "it is hard to believe that Lord Palmerston would have wished the letter to his brother of the 22nd January, 1852, attributing his removal from the Foreign Office to the hostile intrigues of the Orleans family, and to the poisoning of the minds of the queen and prince against him by the emissaries of certain Continental powers, to appear as embodying his final convictions."

We have noted this affair the more attentively, because it has been so persistently misrepresented, and is now finally made clear beyond dispute. But we gladly turn to other and pleasanter passages of the prince's manifold experience of public life in England. Nothing escaped his indefatigable activity, and one never ceases to be astonished at the vast amount and variety of work he was able to press into his days.

He held it [says his biographer] to be one of the duties of the sovereign, whose other self he was, that she should be, if possible, the best-informed person in her dominions as to the progress of political events and the current of political opinion at home and abroad. That our Constitution demands a passive indifference on the part of the sovereign to the march of political events, was in his view a gross misconception. "Nowhere," he states in a private memorandum, written in 1852, "would such indifference be more condemned and

justly despised than in England." "Why," he continues, "are princes alone to be denied the credit of having political opinions, based upon an anxiety for the national interests, their country's honor, and the welfare of mankind? Are they not more independently placed than any other politician in the State? Are their interests not most intimately bound up with those of their country? Is the sovereign not the natural guardian of the honor of the country? Is he not necessarily a politician?" Ministers change, and when they go out of office lose the means of access to the best information which they had formerly at command. The sovereign remains, and to him this information is always open. The most patriotic minister has to think of his party. His judgment, therefore, is often considerably warped by party considerations. Not so the constitutional sovereign, who is exposed to no such disturbing agency. As the permanent head of the nation, he has only to consider what is best for its welfare and its honor; and his accumulated knowledge and experience, and his calm and practised judgment, are always available in council to the ministry for the time without distinction of party.

The extent and accuracy of the prince's information on every subject of political importance impressed all with whom he came in contact. Ministers of state found him as familiar as themselves with the facts immediately connected with the working of their own departments. Ambassadors returning from their legations were struck to find how completely he had at command every significant detail of what had happened within the sphere of their special observation. Diplomats proceeding for the first time to some foreign court learned, in an interview with the prince, not merely the exact state of affairs which they would find awaiting them, but very frequently had the characters of the sovereigns and statesmen with whom they would have to deal sketched for them with a clearness and precision which they afterwards found of the utmost practical service.

This mastery of details could only be gained by great and systematic labor, in itself quite sufficient to absorb the energies of a busy man. But to the claims of politics had to be added those, which science and art, and questions of social improvement, were constantly forcing upon the prince's attention. An extensive correspondence also took up much time, and thus a comparatively small portion of every day was left for that domestic and social intercourse for which the prince was, by his quick observation and natural brightness of spirits, peculiarly fitted, and in which he delighted to throw off for the time the weight of graver cares. He was habitually an early riser. Even in winter he would be up by seven, and dispose of a great deal of work before breakfast by the light of the green German lamp, the original of which he had brought over with him, and which has since become so familiar

an object in our English homes. The queen shared his early habits; but before her Majesty joined him in the sitting-room, where their writing-tables stood always side by side, much had, as a rule, been prepared for her consideration,—much done to lighten the pressure of those labors, both of head and hand, which are inseparable from the discharge of the sovereign's duties.

We catch a pleasant glimpse of the prince "stealing" a quiet moment in the early morning, before the world was astir, to write a message of affection to the old home. In the midst of all his labors and anxieties, the playful humor and affectionate disposition peep out in his private letters. With Baron Stockmar, his correspondence touches graver matters; and what strikes us as the charm of his relations with that wise old mentor, who was always astride on a maxim, or mounted on a principle, is the tone of loving, deferential trust, and almost filial reverence, which inspires the continual appeals for counsel and direction.

Among the sharpest public and personal sorrows of the prince in those years was the death of Sir Robert Peel, with whom he had been closely associated on the commission of the International Exhibition, and whose character, as a member and as a statesman in or out of office, he had learned to hold in the highest admiration. This strong regard was fully reciprocated; and it was at the prince's own request, after Sir Robert had left office, and abandoned all expectation of returning to power, that the cordial relations which official intercourse had created were continued and confirmed. It is evident that Sir Robert was a man and a statesman after his prince's own heart; the dignity and moderation of his foreign policy, the enlightened liberality of his administration at home, the magnanimity of that self-sacrifice with which he had finally renounced all but the ambition of serving his country for no other reward than the testimony of his own conscience—these were qualities and acts which the prince's nature could appreciate. The loss of such a counsellor was felt by the queen and the prince to be irreparable, and it was mourned for as the loss of an inestimable friend. It is easy to understand the affinity between two noble natures, and it may be that the prince's sympathy with the fallen leader of a great party was deepened by his own experience of obloquy and misrepresentation silently endured.

Perhaps the culminating satisfaction of the prince's most cherished ideas and as-

pirations was the success of the long-meditated project of the International Exhibition. The realization of that marvellous enterprise was a triumph of those qualities in which the prince excelled—patience, perseverance, largeness and generosity of purpose, fulness and variety of general knowledge combined with an extraordinary grasp of details, a lofty ideal tempered and restrained by practical good sense. It was a scheme beset by all manner of difficulties from its novelty, its boldness, and its strangeness to English eyes. The prince could well afford to laugh at the vulgar prejudices which found vent in eccentric and facetious public speeches and in the columns of influential newspapers. But to overcome the objections of “society” to the temporary appropriation of a portion of Hyde Park, to secure a guarantee fund for an expenditure that scarcely admitted of calculation, and was to be covered by problematical receipts, to decide upon the structure, and to obtain the support of foreign nations and governments, and of the commercial and industrial community at home, to a project as it seemed, not immediately or directly profitable to exhibitors, at a time when the employers of industry had scarcely recovered from the shocks of a revolutionary and a financial crisis, surely all this was enough to daunt the strongest purpose. It may well be imagined how, when the prince stood under the radiant arch of glass before the queen, on that bright May day, to present the report of the royal commissioners, in the presence of the immense multitude of all nations and tongues, and of the collected treasures of the old world and the new, he may have been conscious of but one misgiving in the midst of that magnificent assemblage.

For, I fear,
My soul hath her content so absolute
That not another comfort like to this
Succeeds in unknown fate.

The queen describes that opening day as the proudest and happiest of her life, and loses no opportunity of indulging her enthusiasm for that prodigious peaceful victory achieved by the prince consort. To the prince himself, overwhelmed as he was by the cares and labors which it entailed upon him, the exhibition was a source of the purest intellectual and moral pleasure from first to last; and upon the closing, as upon the opening, day his happiness at the fulfilment of what was once a dream was expressed in words of gratitude and thanksgiving to the Providence

which had permitted and protected such a festival of concord and good-will. The idea of such an enterprise might have been borrowed from Germany or France; but the prince had secured for England the glory of initiating a new epoch in the history of modern civilization. Nor were the fruits of the enterprise all gathered when the palace, which had risen “like an exhalation,” disappeared more rapidly than it rose. At home and abroad it has borne ample fruit, if it has disappointed the visionary promises of universal pacification which its founder, if too generous to discourage, was too wise to entertain. The disposal of the surplus fund in the hands of the commissioners was the subject of a memorandum by the prince (it is given in the appendix to this volume), suggesting a scheme which has been as yet only partially accomplished by the South Kensington Museum, with its dependencies, so long the subject of ridicule and suspicion, and now acknowledged as one of the most remarkable institutions of our time, and a lasting honor to the country. No doubt the prince's scheme will be fulfilled sooner or later; meanwhile the story of the Exhibition of 1851, as it is told by Mr. Martin, will add, if that be possible, another to the prince's titles to national affection and esteem. Never was his devotion to the national interests more signally manifested, or a public responsibility accepted and discharged with a severer or more sensitive conscientiousness, or a more exact and scrupulous fidelity.

It would take a volume, rather than an article, to dwell, as we should like to dwell, on the lessons and examples which are taught by every page of this biography. We are continually impressed with the fact that the prince had anticipated and sketched out five-and-twenty years ago what are at the present date the last conclusions of statesmanship, whether upon questions of foreign or of domestic policy. Take, for instance, his scheme for the enlargement of the course of studies at the university of Cambridge. It required consummate tact and discretion on the part of the chancellor of that university to conciliate the favor and conquer the objections of a body constitutionally jealous of innovations, and proud of standing from generation to generation upon the ancient ways. Cambridge was won over to reform, and her sister university has not lagged too far behind. Or take the question of Church government and discipline, of the position and duty of the bishops in the legislature, of the Irish university,

and the problem of national education in a Catholic country; of sanitary reform and the utilization of sewage; of provident and friendly societies; of the improvement of the homes of the poor; of the creation of an army reserve. Upon all these questions the prince was not only in advance of his own time, but of many a later day.

His memorandum on the Church crisis was written during the excitement of the "papal aggression." That excitement, by-the-bye, was certainly not shared by the queen and the prince consort, if we may judge by the following extract from a private letter:—

I would never [her Majesty writes] have consented to say anything which breathed a spirit of intolerance. Sincerely Protestant as I always have been and always shall be, and indignant as I am at those who call themselves Protestants, while they are in fact quite the contrary, I much regret the unchristian and intolerant spirit exhibited by many people at the public meetings. I cannot bear to hear the violent abuse of the Catholic religion, which is so painful and so cruel towards the many good and innocent Roman Catholics. However, we must hope and trust this excitement will soon cease, and that the wholesome effect of it upon our own Church will be lasting.

The prince's "memorandum" deserves careful attention, but we can only find room for the concluding paragraphs:—

Let us apply these considerations to the present crisis. We have intense excitement and animosity of parties, and the most heterogeneous elements, views, and interests, joining in the outcry against the pope, and particularly against the Puseyites. There will be no want of proposals in the next session of Parliament for special measures of detail; assembling of the Convocation; alteration of the rubric; change of the Thirty-nine Articles; removal of the bishops from the House of Lords; increase of the bishops; alteration of tithes: separation of Church and State, etc., etc. And it is very likely that the fire of indignation against the Romanizers will spend itself, and the end be general discontent and a weakening of the Church.

If this is not to be the inevitable consequence of the present movement, those who mean to lead it ought to be content with the assertion of some intelligible and sound principle, and should endeavor to find some proper formula for expressing it.

The principle will easily be found if the common cause of discontent, which has occasioned the excitement, has been ascertained.

If strictly analysed, this cause appears to be the introduction of Romish doctrines and practices by the clergy of England, contrary to the will and feelings of the Protestant congregations,

under the assumption that the clergy alone had any authority in Church matters.

If this be the fundamental evil, against this ought the remedial principle to be directed—and this principle might thus be expressed:—

That the laity have an equal share of authority in the Church with the clergy.

That no alteration in the form of divine service shall therefore be made by the clergy without the formal consent of the laity.

Nor any interpretation given of articles of faith without their concurrence.

When in 1850 the Duke of Wellington proposed to facilitate by certain departmental changes the future assumption by the prince consort of the command of the army, the prince explained his motives for declining it. The duke was convinced by reasons which had not occurred to him, looking at the question from another point of view, and Lord John Russell and Sir Robert Peel equally concurred in the prince's objections. It is not very pleasing to remember that club politicians were imputing to the prince something like an intrigue to obtain the post, at the time when he was writing to the duke the letter published by Mr. Martin, which reflects such honor upon his judgment.

A few lines quoted by Mr. Martin from a reply of the prince's to Baron Stockmar, written shortly after the death of the Duke of Wellington, suffice to mark the uprightness of the man who was content, says Mr. Martin, "to sacrifice all personal ambition, and to have his best efforts ignored, or even misunderstood, so that only they strengthened the monarchy and raised the prestige of England."

Windsor Castle, 15th October, 1852.

... Your appeal to me to replace the duke for the country and the world shall stimulate me to fresh zeal in the fulfilment of my duties. The position of being merely the wife's husband is, in the eyes of the public, naturally an unfavorable one, inasmuch as it presupposes *inferiority*, and makes it necessary to demonstrate, which can only be done by deeds, that no such inferiority exists. Now *silent* influence is precisely that which operates the greatest and widest good, and therefore much time must elapse before the value of that influence is recognized by those who can take cognizance of it, while by the mass of mankind it can scarcely be understood at all. I must content myself with the fact that constitutional monarchy marches unassailably on its beneficent course, and that the country prospers and makes progress.

The constitutional position of the prince consort was more elaborately discussed in January 1854, in consequence of the incessant and virulent attacks of a certain sec-

tion of the press. So outrageous and persistent was the malignity of the assailants, that the present biographer has been compelled to devote an entire chapter to the subject. The Eastern question, which in those days had arisen from a dispute between the protectors of the Latin and the Greek Church about the keys of the holy Places at Jerusalem, had gathered fast and far, and was now overspreading the horizon like a fiery cloud. A Russian army had crossed the Pruth, the Porte had answered the challenge by a declaration of war; Prince Menschikoff's threatening mission to Constantinople had come and gone, and the last negotiations of the British cabinet to avert the impending storm had been torn to shreds by the destruction of the Turkish squadron in the bay of Sinope. At home the war-fever was at its highest; the lassitude of a long peace, the busy hum of preparation in the dockyards and arsenals, the spectacle of a naval review at Spithead and of a camp at Chobham, had thoroughly aroused the pugnacity of a nation which, in spite of all its shopkeeping instincts and aptitudes, dearly loves a fight. Russia had insisted, in the form of an ultimatum, on a convention with the Porte, virtually creating in her own behalf an exclusive protectorate over the Christians of the Eastern Church, and annihilating by a stroke of the pen their allegiance to the sultan. The policy of our government at this conjuncture is lucidly described by Mr. Martin; and the letters of the prince consort to Baron Stockmar have a strange effect upon the reader who remembers how freely he was charged by ingenious gossip with Russian sympathies.

On the 27th of September, 1853, the prince had written :—

Balmoral, 27th September, 1853.

But how now to avoid an European war? For only with the most *dishonorable* cowardice on the part of the powers could the demands be conceded by them which are now set up. Austria, indeed, is capable of this moral degradation, and an imperial visit, with orders, etc., can do much; but we, I trust, will never sink so low. I cannot disguise from you, that the course of the whole affair has done Aberdeen infinite injury with the public, and the outcry against him and Clarendon will soon become loud, *unjustly* so; but the mass of mankind judges only after the event. . . . He is quite right, and is to be honored and applauded, for maintaining, as he does, that we must deal with our enemies as *honorable* men, and deal honorably towards them; but that is no reason why we should think *they are so in*

fact; this is what he does, and maintains it is right to do.

The worst symptom of all is the danger to which Turkish fanaticism has already given rise in Constantinople. Our fleet is under orders to run in there, should the lives of the Christian population or of the sultan himself be in danger; and four ships have accordingly sailed for the Bosphorus. The greater the tumult, the better are the Russians pleased.

The violent manifesto of the emperor Nicholas to his subjects appeared a few days later, and at the same time "the emperor addressed an autograph letter to our queen."

This letter was at once submitted by the queen to Lord Clarendon for his and Lord Aberdeen's perusal, and opinion as to the answer to be returned. When this had been obtained, her Majesty replied on the 14th of November. The following passage, which alone it is necessary to translate from the original French, answered the appeal in very explicit terms :—

"Being heartily anxious, Sire, to discover what could have produced this painful misunderstanding, my attention has been naturally drawn to Article 7 of the Treaty of Kainardji; and I am bound to state to your Majesty that, having consulted the persons here best qualified to form a judgment upon the meaning to be attached to this Article, and after having read and re-read it myself, with the most sincere desire to be impartial, I have arrived at the conviction, that this Article was not susceptible of the extended meaning which it has been sought to attach to it. All your Majesty's friends, like myself, feel assured that you would not have abused the power which would on such a construction have been accorded to you: but a demand of this kind could hardly be conceded by a sovereign who valued his own independence.

"Moreover, I will not conceal from your Majesty the painful impression produced upon me by the occupation of the Principalities. For the last four months this has caused a general commotion in Europe, and is calculated to lead to ulterior events, which I should deplore in common with your Majesty. But as I know that your Majesty's intentions towards the Porte are friendly and disinterested, I have every confidence that you will find means to give expression and effect to them, so as to avert those grave dangers, which, I assure you, all my efforts will be directed to prevent. The impartial attention, with which I have followed the causes, that up to this time have led to the failure of all attempts at conciliation, leaves me with the firm conviction, that there exists no real obstacle which cannot be removed, or promptly surmounted with your Majesty's assistance."

Her Majesty's letter was of course submitted to Lords Aberdeen and Clarendon before being despatched, and was by them

"thought excellent." It was known in St. Petersburg that a letter had been written to the queen of England. Nor was it long before our ambassador there heard how much the emperor had been mortified by the tenor of the reply. He regretted "that he had not followed Nesselrode's advice and kept clear of politics in his letter, for the queen had in fact gone heart and soul with her ministry." Count Nesselrode was very anxious to learn from our ambassador, if he knew the contents of the queen's reply. To him, as well as to his other informant, Sir Hamilton Seymour could only answer that he did not. "These correspondences," he added, "between sovereigns are not regular according to our constitutional notions; but all I can say is, that if her Majesty were called upon to write upon the Eastern affairs, she would not require her ministers' assistance. The queen understands all these questions as well as they do."

The day after this reply was sent off (15th November), the prince wrote to Baron Stockmar from Windsor Castle:—

The Eastern complication becomes every day more dangerous, and the chances grow less and less of escape from a European war. Still all our energies will be directed to this object . . . We had made some way, when the new manifesto of the emperor, full of insolence and falsehood, threw us back where we were; it was the same before Olmütz, with Nesselrode's *note explicative*. In short, every document from the Russian chancery has proved to be Russia's worst enemy.

The emperor has written to Victoria with an exposition of his case, has again talked of his word of honor, and on this ground besought her, "*de juger entre lui et le gouvernement anglais*." Victoria has sat in judgment, but her judgment must be against her imperial brother, and I hope in a way to make him feel that some amends to honor are still due.

By way of interlude to these troubles in the East, a ministerial crisis—occasioned, not by the Eastern question, but by a proposal of Lord Aberdeen's to vacate the premiership in favor of Lord John Russell, and by the expressed determination of Lord Palmerston never again to serve under the colleague who had dismissed him from the Foreign Office—had almost shattered the coalition cabinet. It was not the burning question of Russian ambition, but the wrath of Achilles, and his opposition to the project of a reform bill which Lord Russell would fain have brought forward in the paternal capacity of prime minister, that provoked this outbreak of hostilities in Downing Street on the 16th of December. Lord Palmerston had suddenly resigned, and some public instructors discovered in the almost simultaneous occurrence of the minister's resignation

and the disaster at Sinope, the shadow of a sinister influence behind the throne. Ten days later, however, Lord Palmerston was back again in office, and the prince humorously depicts the angry bewilderment of a credulous public at these ministerial manoeuvres:—

The defeat at Sinope has made the people quite furious; treachery is the cry, and, guided by a friendly hand, the whole press has for the last week made "a dead-set at the prince" (as the English slang phrase goes). My unconstitutional position, correspondence with foreign courts, dislike to Palmerston, relationship to the Orleans family, interference with the army, etc., are depicted as the causes of the decline of the State, the Constitution, and the nation, and indeed the stupidest trash is babbled to the public, so stupid that (as they say in Coburg) you would not give it to the pigs to litter in.

Now Palmerston is again in his seat, and all is quiet. The best of the joke is, because he went out the Opposition journals extolled him to the skies, in order to damage the ministry, and now the ministerial journals have to do so, in order to justify the reconciliation (?) . . . I fear the whole affair will damage the ministry seriously. Palmerston gulps down, it is true, all his objections to the Reform Bill, (which is to be altered in none of its essentials), but he will lead the world to believe that it is to him concessions have been made.

Meanwhile, we are getting nearer and nearer war, and I entertain little hope of its being averted. The emperor of Russia is manifestly quite mad. We shall now be compelled to take possession of the Black Sea, so as to prevent further disasters like that of Sinope, and he may very well regard this as a war measure, and himself declare war; or it may be brought on any day by the fleets coming into collision. God be merciful to the world, if it come to this! . . .

The prince bore up under this tempest of abuse with the calmness of a conscience at ease, if not with an unwounded heart. Such imputations, says his biographer, although he might despise them, were especially painful to him after all he had done to win the confidence of this country.

To Baron Stockmar the prince wrote:—

Physically we are all well, except a catarrh on my part. Morally, in this new year, as in the old, we have a world of torment.

The attacks upon me continue with uninterrupted violence, only with this difference, that the Radical press has given them up, and the Protectionist papers now vie with each other in the unscrupulous falsehoods and vehemence with which they persevere in them. There is no kind of treason to the country of which I have not been guilty. All this must be borne tranquilly until the meeting of Parliament on the 31st, when Aberdeen and

John Russell are prepared to undertake my defence.

Again, on the 11th of January, he writes:—

I will write you only one word about the unceasing attacks upon me in the press here, which have really reached an incredible height. I do this in no spirit of petty complaint over what I am quite able to bear calmly and in reliance on my good conscience, but only to keep you *au courant*.

Parliament meets on the 31st, and till then not the least notice will be taken of all that has been said; but it will then come in all probability to an *éclaircissement*, should those who stab in the dark not be afraid of an open conflict. My health is tolerable; I am somewhat teased with rheumatic pains in the shoulder and with catarrh.

To Lord Aberdeen the queen wrote:—

In attacking the prince [she wrote, 4th January, 1854, to Lord Aberdeen], who is one and the same with the queen herself, the throne is assailed; and she must say, she little expected that any portion of her subjects would thus requite the unceasing labors of the prince.

Baron Stockmar, in a letter which Mr. Martin correctly describes as an "essay," examines curiously this morbid condition of the public mind, and brings all the wisdom of his long experience to bear upon the investigation of the causes of such attacks upon the prince. This "essay" is nothing less than a complete manual of political philosophy and constitutional doctrine. The functions of the sovereign, the relations between the crown and the responsible ministers, and of the three estates, are expounded by him with unerring acuteness of insight. With regard to the special case to which his attention had been called, he states his opinion with characteristic distinctness and sincerity. The baron concludes:—

Now as to the accusations which have been raised in the press against the prince, they amount *after separating calumny from truth*, to no more than this—"that the prince has acted and now acts as the queen's private secretary." The ministers have therefore to point out, that all that is true in the accusation is, that the prince acts as the queen's private secretary, and that all else is simply calumnious. Then the right of the queen to appoint as her private secretary whomsoever she chooses will have to be explained and vindicated; and finally it has to be shown that the queen could select no better private secretary, or one who by his position offers more moral guarantees, than her husband, the father of the heir to the throne, and the regent appointed by law in the event of a minority.

If, however, over and above the moral guarantees, constitutional guarantees be demanded from *this* private secretary, then these two are secured by the fact, that the prince has taken the oaths as a privy councillor. For if this circumstance suffice, in the judgment of the most competent jurists, to give Lord John Russell the character of responsible adviser of the crown, and to justify the leadership of the Lower House, then it must also extend to qualify the prince for the post of private secretary.

Finally, if the ministers have a mind also to expose the wickedness and folly of the charges, they can easily do so, by pointing to the fact *that nature existed before the constitution*. They will on this head ask people to consider, whether a princess, who makes light of the duties of wife and mother can be a good queen; and whether, therefore, it is just and equitable to expect of the queen, that she should depose her husband from the position he is entitled to as such, and place him in one *which must be fatal to the intimate confidentiality of the married state*.

Perhaps it may be added, that from none would such a demand have less been looked for than from the English. For if the confidentiality of husband and wife is carried so far among them—as I had occasion to learn when the last ministry was formed, and told Lord Aberdeen at the time—that the deliberations of the husband with the wife on important affairs of state modify the expressed opinions of the *husband*, surely it is not by these same Englishmen that the wife will be reproached for invoking the advice and assistance of her husband in the conduct of her affairs.

"In this remarkable letter," Mr. Martin truly observes, "the deepest student of our political history will find much to learn and profit by," and yet the writer was one of those foreign advisers of whose counsels Englishmen had been warned to beware. The prince's reply is equally vigorous and keen in its dissection of the popular prejudices and misunderstandings. After dealing with the higher sections of society, the prince proceeds as follows:—

Now, however, I come to that important substratum of the people on which these calumnies were certain to have a great effect. A very considerable section of the nation had never given itself the trouble to consider what really is the position of a queen regnant. When I first came over here I was met by this want of knowledge and unwillingness to give a thought to the position of this luckless personage. Peel cut down my income, Wellington refused me my rank, the royal family cried out against the foreign interloper, the Whigs in office were only inclined to concede to me just as much space as I could stand upon. The Constitution is silent as to the consort of the queen; even Blackstone ignores him, and

yet there he was, and not to be done without. As I have kept quiet and caused no scandal, and all went well, no one has troubled himself about me and my doings; and any one who wished to pay me a compliment at a public dinner or meeting, extolled my "wise abstinence from interfering in political matters." Now when the present journalistic controversies have brought to light the fact that I have for years taken an active interest in all political matters, the public, instead of feeling surprise at my reserve, and the tact with which I have avoided thrusting myself forward, fancied itself betrayed, because it felt it had been self-deceived. It has also rushed all at once into a belief in secret correspondence with foreign courts, intrigues, etc.; for all this is much more palpable than that thirty millions of men in the course of fourteen years should not have discovered that an important personage had during all that time taken a part in their government. If that could be concealed, then all kinds of secret conspiracy are possible, and the Coburg conspiracy is proved to demonstration.

Beyond this stage of knowledge, which was certain sooner or later to be reached, we shall, however, soon have passed; and even now there is a swarm of letters, articles, and pamphlets, to prove that the husband of the queen, as such, and as privy councillor, not only may, but in the general interest must be, an active, and responsible adviser of the crown; and I hope the debate in Parliament will confirm this view, and settle it at once and forever.

The recognition of this fact will be of importance, and is alone worth all the hubbub and abuse. I think I may venture to assume that the nation is ashamed of its past thoughtlessness, and has already arrived at a just understanding of my position; but it needed some hard hitting to open their eyes.

When Parliament met on the last day of January, the *déclairement* which the prince had patiently waited for was decisive and complete. Lord John Russell and Lord Aberdeen for the Government, Lord Derby and Mr. Walpole for the Opposition, disposed of the calumnies by a simple statement of the facts, and bore earnest testimony to the character and conduct of the prince. "If Mr. Disraeli was silent on this occasion, doubtless it was because he felt that to say more than had been said by Lord John Russell and Mr. Walpole would have been superfluous, for, in a letter written to a friend a few days before, he had said, 'The opportunity which office has afforded me of becoming acquainted with the prince filled me with a sentiment towards him which I may describe, without exaggeration, as one of affection.'"

The queen and the prince lost no time in announcing to their faithful old friend in Germany "the triumphant result of the debates in both houses." "The position," writes the queen, "of my beloved lord and master, has been defined for *once and all*, and his merits have been acknowledged on all sides most duly. . . . We are both well, and I am sure will now recover the necessary strength and equanimity to meet the great difficulties and trials which are before us." "The impression," writes the prince, "has been excellent; and my political status and activity, which up to this time had been silently assumed, have now been asserted in Parliament, and vindicated without a dissentient voice." Indeed, the cruelty and cowardice of insults which could not be, in the prince's exceptional position, resented, and of calumnies which could only be met with the silence of disdain, might have struck any fair and generous mind. But the depth of their ignorant unreasonableness and injustice can only be measured by the documentary evidence which has now been brought to light. "Evil is wrought by want of thought as well as want of heart." The gentle humorist, who embalmed that reflection in his poignant and pathetic verse, was moved by the immense indifference of a populous city, in which, as in a boundless sea, so many wrecks of wasted and abandoned lives go down unregarded, without a hope of rescue. The words have a closer application. How many reputations of public men, eminent in station, and charged with the most momentous responsibilities, have been recklessly pursued with obloquy and vituperation by ready writers and fluent speakers, who had not taken the trouble to sift the quality of the evidence upon which these facile suggestions and these ingenious suspicions were based! And this is how what is called public opinion is manufactured in haste and corrected at leisure; it may be when the victim of the hasty judgment has passed beyond the reach of tardy reparation.

It is impossible to read the following memorandum without being struck by the singular opportuneness of its publication. After the lapse of twenty-three years nothing more or better remains to be said or written — whether by orators charged with the destinies of humanity, or by statesmen entrusted with the interests of the British empire — on this most perplexing of all the questions that vex the peace of the civilized world; —

Memorandum for the Consideration of the Cabinet.

Windsor Castle, 31st October, 1853.

The questions involved in the Oriental dispute, and the motives which have guided and ought to guide the conduct of the European powers, and of England in particular, are so complicated and interwoven, that it is very desirable to separate and define them before we can judge of what will be the right future line of action on our part. When Prince Menschikoff had obtained the concessions which, in our opinion, Russia was entitled to demand, and made new demands not borne out by any treaty, we declared these demands unjust and untenable, and Turkey in the right in refusing compliance with them.

When Russia invaded the Principalities, for the avowed purpose of holding a pledge in hand by which to coerce Turkey into compliance, we declared this an infraction of international law, and an act of unjustifiable aggression upon Turkey, and justifying the latter in going to war. We advised her, however, at the same time to remain at peace. We took upon ourselves the task of obtaining from Russia by our negotiations a diplomatic settlement of the dispute, not involving the concessions which we have said Turkey ought not to make, and securing the evacuation of the Principalities.

These negotiations have hitherto been unattended with success. We have in the mean time sent orders to our fleet to protect and defend the Turkish territory from any Russian attack.

Throughout the transaction, then, we have taken distinctly the part of Turkey as against Russia. The motives which have guided us have been mainly three:—

1. We considered Turkey in the right and Russia in the wrong, and could not see without indignation the unprovoked attempt of a strong power to oppress a weak one.

2. We felt the paramount importance of not allowing Russia to obtain in an underhand way, or by a legal form, a hold over Turkey, which she would not have ventured to seek by open conquest.

3. We were most anxious for the preservation of the peace of Europe, which could not fail to be endangered by open hostilities between Turkey and Russia.

These motives must be pronounced just and laudable, and ought still to guide our conduct. By the order to our fleet, however, to protect the Turkish territory, and by the declaration of war now issued by the Turks, the third and perhaps most important object of our policy has been decidedly placed in jeopardy. In acting as auxiliaries to the Turks we ought to be quite sure that *they* have no object in view *foreign* to our duty and interests; that they do not drive at war whilst we aim at peace; that they do not, instead of merely resisting the attempt of Russia to obtain a protectorate over the Greek population incompatible with their own independence, seek

to obtain themselves the power of imposing a more oppressive rule of two millions of fanatic Mussulmans over twelve millions of Christians; that they do not try to turn the tables upon the weaker power, now that, backed by England and France, they have themselves become the stronger.

There can be little doubt, and it is very natural, that the fanatical party at Constantinople should have such views; but to engage our fleet as an auxiliary force for such purposes would be fighting against our own interests, policy, and feelings.

From this it would result that, if our forces are to be employed for any purpose, however defensive, as an auxiliary to Turkey, we *must insist* upon keeping not only the conduct of the negotiation, but also the power of peace and war, in our own hands, and that, Turkey refusing this, we can no longer take part *for her*.

It will be said that England and Europe have a strong interest, setting all Turkish considerations aside, that Constantinople and the Turkish territory should not fall into the hands of Russia, and that they should in the last extremity even go to war to prevent such an overthrow of the balance of power. This must be admitted, and such a war may be right and wise. But this would be a war not for the maintenance of the *integrity of the Ottoman Empire*, but merely for the interests of the European powers of civilization. It ought to be carried on unshackled by obligations to the Porte, and will probably lead, in the peace which must be the object of that war, to the obtaining of arrangements more consonant with the well-understood interests of Europe, of Christianity, liberty, and civilization, than the reimposition of the ignorant, barbarian, and despotic yoke of the Mussulman over the most fertile and favored portion of Europe.

During the period with which the present volume is concerned Baron Stockmar was seldom in England; his visits were far between and of short duration. The increasing infirmities of age, ill-health, and the perturbations of German politics detained him at home. As a representative in the Diet, he had a part to play which evidently taxed to the utmost his philosophic patience and equanimity; the organized anarchy of the National Assembly at Frankfort, and all the folly and violence of the revolutionary leaders depressed and disquieted, if they could not bring him to despair of the ultimate issue of the struggle out of that morass of impotence and imbecility to the firm ground of a free, compact, and united fatherland. He did not live to see the hour or the man, for the great chancellor to come was then comparatively unknown; but his letters show that he despaired of a peaceful emancipation from Austrian

pretensions, or a peaceful reconstruction of the federal polity; and that he had as little faith in dynastic as in popular wisdom. But it is his letters to his beloved pupil about England, which for the better part of his life had been his second country, that supply some of the most instructive pages in this volume. There is a letter of his on the education of the royal children, and especially of the heir to the throne, in which even the sturdy Philistinism of the honest British Radical will not easily discover a reactionary or a servile spirit, such as a German court and the intimacy of princes might be expected to inspire.

The reciprocal affection of the prince and his old master, is alike honorable to both and delightful to the reader of this story of a noble life, or rather of two noble and beautiful lives made one by that perfect wedded love, which every joy and every sorrow seems to consecrate afresh, and death itself can only make immortal.

The political chapters of this volume, or perhaps we should say the chapters which relate to political and public affairs, are so rich in varied interest and instruction, that we have not unreluctantly passed over many charming fugitive sketches of that happier life of the prince — the life of peace and quietness, which at rare intervals he was able to snatch from public duties and the cares of State. How insistent and incessant were these demands upon his precious hours, how rare and scattered the moments of leisure and retreat, how unrelaxing the strain upon his energies and spirits, Mr. Martin has shown in a summary of a single fortnight's occupations.

The present volume covers rather less than six years; but of no life can it be more truly said than of this that it cannot be counted by the clock. One year of such indefatigable beneficence is worth half a century of self-seeking ambition or self-indulgent ease. Nor, when we speak of years, can we escape the mournful recollection that it was six years out of a span of twenty, and that only seven remain. Chequered as the common human lot were these six years, as recounted by the biographer. We have glimpses of great happiness, but it is for the most part of that happiness which is only to be found in "the city of the soul." The queen and the prince had more than their share of those partings and bereavements which are the most certain and constant admonitions of our mortal destinies. The deaths of Queen Adelaide, of Louise, the

queen of the Belgians, of Count Mensdorff, were more than transient afflictions. They made the life of the mourners lonelier than before. Lord Melbourne had passed away in his seventieth year, Mr. Anson in the prime of manhood. Other losses there were in the royal circle, less poignant, but affecting as the associations of early days which have suddenly passed into memories. There was the double and doubly irreparable loss of the tried and trusted adviser in affairs of State, the cherished personal friend, in the untimely departure of Sir Robert Peel. These repeated sorrows are brought home to us as they are recorded by the queen in those fragments of letters with which Mr. Martin's narrative is interspersed; letters, one can see, written with a trembling hand and often blurred with natural tears.

With the happy art that knows how to distribute the lights and shadows of a picture, Mr. Martin agreeably diversifies his chapters of political history with an admirably fresh and vivid narrative of those royal visits to Liverpool, to Manchester, to York, to Grimsby, to the southern coasts, and above all to Ireland, which, after the memorable experiences of famine and insurrection, brought out in strong relief the amiable and affectionate instincts of an impressionable and suffering people. We confess that Mr. Martin's account of the enthusiasm of the population of Cork, Dublin, and Belfast, makes us regret that the kindness of a nation so disposed to be loyal has not in later years enjoyed more frequent opportunities of indulgence. Not that we would grudge her Majesty's affection for her Highland home, of which we discover the germs and the growth in the first of the visits to Abergeldie, before Balmoral had become the property of the queen. It is evident from Mr. Martin's description of the queen's first sojourn at Holyrood that the romance of Scottish history had touched her heart long before Balmoral became endeared to her, not so much by its comparative privacy and its keen, invigorating air, as by the hallowing remembrance of a voice that is hushed, a face that has vanished, and a footstep that will never more return. Like Balmoral Castle, Osborne House, too, with its terraces and gardens, was a creation of the prince consort's; and his biographer describes the sense of freedom and enjoyment with which the prince, released for a few days from the trammels of State, would resume the avocations and pursuits of a country gentleman; laying out his new domain, pruning and planting, super-

intending his model farms, surveying with a master's eye his cattle, his crops, his gardens, his fields. Perhaps one of the causes of the imperfect sympathy of a certain class of English society with the prince's tastes and aims was due to the fact that, although an active and even ardent sportsman at his own times and seasons, a bold rider, and a good shot enough, he had never the ambition to qualify himself for the post of a "whip" or a game-keeper, and could never bring himself to believe that sport was the one thing worth living for, out of town. To cultivate the arts, to be a student of the sciences, to seek a recreation from politics in social economy, in practical philanthropy, in schemes of university reform and national education, in providing comfortable homes for the poor and re-constituting their friendly societies on a sounder basis of self-help, besides being an occasional foxhunter and deer-stalker — all this many-sided activity may have seemed a little "un-English" to worthy gentlemen who never read a book, and who spent half their lives in going out to kill something; as the prince's ideas of an international tournament of industry appeared a little un-English to the parochial mind. Happily the prince was spared to see the blossoming if not the fruit of his labors, and to feel assured that he had bequeathed to succeeding generations a record of good works more enduring than bronze or marble. Her Majesty has enriched this volume with many trivial fond records of a wife's affection; and among these unrestrained outpourings of tenderness and gratitude to Heaven for having granted her so pure and priceless a gift as her husband's sustaining love, there are two that it is difficult to read without a dimness of the eyes: —

Albert [the queen writes to King Leopold in February, 1852,] grows daily fonder and fonder of politics and business, and is wonderfully fit for both — showing such perspicuity and such courage — and I grow daily to dislike them both more and more. We women are not made for governing: and if we are good women, we must dislike these masculine occupations. But these are times which force one to take interest in them, *mal gré bon gré*, and, of course therefore, I feel this interest now intensely.

The other is a passage in a private memorandum of the queen's written in 1844, in which her Majesty laments that the pressure of public duty made it impossible to keep the religious training of the princess royal wholly within her own hands.

It is already a hard case for me that my occupations prevent me being with her when she says her prayers. . . . I am quite clear that she should be taught to have great reverence for God and for religion, but that she should have the feeling of devotion and love which our Heavenly Father encourages His earthly children to have for Him, and not one of fear and trembling; and that the thoughts of death and an after life should not be represented in an alarming and forbidding view, and that she should be made to know as yet no difference of creeds, and not think that she can only pray on her knees, or that those who do not kneel are less fervent and devout in their prayers.

And now we must regretfully close a volume which is not only a permanent contribution to English biographical literature but to English history. No one will read it once only. To have written it is not only to have written a good book, but to have done a good action. It is the picture of a character of stainless eminence, and the story of a career of uninterrupted service to England and to the welfare of mankind.

Throughout the space of the years we have traversed under Mr. Martin's sympathetic guidance, in the footsteps of the prince, there is not a single day in which we have not found him, as Goethe said of Karl August, "busied with something to be devised and effected for the good of the country; something calculated to better the condition of each individual in it." In his deep and constant devotion to duty he brought his natural instincts and disposition, his temperament and his tastes, under the strictest discipline, and into the most absolute subjection. His health and strength were consumed by the unrelenting ardor of his passion for the public good, and by the concentration of all the powers of his intellect and all the emotions of his heart upon the fulfilment of his responsibilities. What, under other circumstances, and in other conditions, might have been desultoriness in youth, or dreaminess or dilettanteism in manhood, became stability of will and steadfastness of purpose, as consort, as father, as "the first of subjects." Who can read aloud the last sentence in this volume? It suspends the utterance and shakes the heart. It is from a letter written by the queen, in February 1854, on the anniversary of her marriage, to Baron Stockmar: —

This blessed day is full of joyful and tender emotions. Fourteen happy and blessed years have passed, and I confidently trust many more will, and find us in old age as we are now, happily and devotedly united. Trials

we must have, but what are they, if we are together?

Si quid fata aspera rumpas. We who know what is to come, seem to trace in these loving words the lengthening shadows of the too early autumn. Have we not been haunted through these pages by the foreboding consciousness that such a life could never suffer the lingering degeneration of old age? Let us be consoled by the reflection that if the magnanimity that held its peace amidst the murmur of evil tongues was not undepressed by grief at being misjudged; if that bright, eager soul was too early wearing out its vesture of decay, it was a soul exalted above calumny and calamity, and borne by its own sustaining strength into a calmer and clearer air than that which vulgar natures breathe.

How often in later days has our country learned to regret the loss of that large and luminous mind; that sedate and temperate judgment; that wide-reaching solicitude, and that perfect self-control, for which the *civium ardor prava jubentium* had neither terrors nor temptations; that fine and firm intelligence, unfalteringly guided by right reason, never destitute of heart, unceasingly consulting the true and vital interests of England without dissociating them from the better future of the world!

From The Spectator.

THE NEW-FOUND ENEMIES OF MAN.

CIVILIZED man, having conquered the most visible of his enemies,—savages and wild beasts of the more visible and tangible kind,—has nevertheless not by any means attained a state of even comparative security. It is true that the newest of his enemies are minute, sometimes even of the more or less microscopic kind, but Sir Wilfrid Lawson was not far wrong when he said that an invasion from the Colorado beetle was much more to be feared than an invasion from Germany or France. With regard to the human invader, we have at least the "streak of silver sea" and a powerful navy to rely on; but with regard to the Colorado beetle, it seems that it would take its passage just as cheerfully on our own ironclads as on any other craft by which it could cross the Atlantic, and would probably have an excellent chance of landing successfully on our shores from the very navy which defends them against a less formidable foe. The Canadian minister of agriculture has

just assured Lord Carnarvon that this destructive creature not only flies, but navigates smooth water, and travels—of course without charge—by railway carriages, and on all sorts of ships. Not only so, but the creature seems to have a wonderful power either of subsiding into a kind of inert life when it cannot get food suitable for it, or of getting enough food to sustain life in all sorts of situations where we should suppose that it could get none, and then returning to full activity and vigor whenever it finds itself in the neighborhood of suitable nourishment. Indeed, the Canadian minister of agriculture declares that the notion of preventing the introduction of the Colorado potato-beetle into any part of the earth with which human beings keep up active communication is perfectly chimerical. All that can be done to keep him under is to destroy the eggs and larvæ as effectually as possible as soon as their existence is detected, and before the beetle itself is hatched. By a sufficient expenditure of money and time, says the Canadian minister of agriculture, this may be fairly done. The eggs deposited on the under side of the leaves of the potato-vine should be destroyed as soon as discovered. The buds and leaves should be watched for grubs, which may be destroyed by the use of "Paris green," and the beetle itself should be crushed whenever seen. These remedies are, he says, fairly effectual in keeping the plague under, though of course they will add materially to the cost of potato-culture, and enhance the price of an article which it takes such elaborate care to protect. Nor is the Colorado beetle the only minute foe whose invasion we have to fear. Six of the Southern States of America are concerting measures against grass-hoppers, which infest them with a milder form of the same evil caused by the great locust invasions from which the coasts of the Mediterranean have so often suffered. Then, again, the husbandmen of the vine, in vine-growing countries, have to provide against the phylloxera plague, and the cultivators of silkworms have to provide against the pibrine plague. Worse still, there are small organisms of various kinds which are but too apt to supplant the proper ferments in all processes of fermentation, and which, if they get into the malt, spoil the beer, and if into the grape-juice, spoil the wine, and against these practically invisible enemies all sorts of expensive precautions have to be used. Lastly, and most important of all, there are certain spores which grow and multiply rapidly

when fed on animal blood, and which produce the various diseases known as blood-poisoning of various kinds. There is the seed whose growth causes cholera, and another whose growth causes scarlet fever, and another whose presence means typhoid, and another which results in splenic fever, and another which generates small-pox, and probably many more besides, which grow at the expense of animal life or health, — of some of which Professor Tyndall has given a graphic account in the paper on fermentation in the November *Fortnightly*. Unquestionably, either the minute organic world is beginning to avail itself of the great advantages which its all but invisibility gives it in competing with men, or if it is only doing now what it has always done, but what is only just beginning to be understood; a greater importance is now attached to its proceedings, partly because the danger is understood, and partly, — perhaps even more, — because the weaker constitution of modern man is now so much protected against these dangers that the race suffers more, though the individuals suffer less. Of course it is obvious that, when fewer effective causes are at work to thin out the stock, those which injure it, without diminishing its fertility, tend to render it more sensitive to all external influences for the future, and therefore make the very disease against the power of which the new remedies or alleviations have been found, more menacing in some respects to the health of the race, though less so to the individuals who suffer from it, than it was at a time when it was more generally fatal. It may well be that the very knowledge which science has gained of the new dangers to which man is subject, has rendered these diseases of *greater* physical consequence by diminishing their fatality. The more delicate, better-guarded, longer-lived, but more sensitive constitutions which science has taught us how to protect to an average age beyond that to which even the healthy lived in former times, are necessarily more overshadowed by the physical ills of which we know so much more than our ancestors ever were, — not only because of our new knowledge, but because the tenderer inherited constitution, which has been piloted through so many dangers, is more keenly alive to such dangers than were the more hardy constitutions which had survived in spite of running the gauntlet of much more fatal ills. Modern man, whose food and drink are beset by Colorado beetles and phylloxera, whose clothing is threatened by pibrine, and whose

life itself is haunted by all sorts of minute spores which so feed on his blood as to generate fever, cholera, and a great variety of plagues, is obviously in one respect not the better, but the worse for the knowledge which teaches him how to evade the worst consequences of these plagues. He has less to fear from them individually, but they have more part in him than they had when they produced more deadly results. They have inoculated him, and though they count fewer victims slain, they transmit into a remoter future the weakness and suffering which they cause. The race of men whom the common germ-poisons no longer kill off retains more of the stamp of their paralyzing effects than the race of men which succumbed at once to the first onset of the unknown foe.

This is why we cannot altogether share the enthusiasm, and can by no means adopt the sentiment, of that somewhat declamatory peroration to Professor Tyndall's Glasgow audience which ends the lecture published in the last *Fortnightly*. "This preventible destruction," says Professor Tyndall, referring to the havoc caused by germs of disease floating about the air, "is going on to-day, and it has been permitted to go on for ages, without a whisper of information regarding its cause being vouchsafed to the suffering, sentient world. We have been scourged by invisible thongs, attacked from impenetrable ambuscades, and it is only to-day that the light of science is being let in upon the murderous dominions of our foes. Men of Glasgow, facts like these excite in me the thought that the rule and governance of this universe are different from what we in our youth supposed them to be, — that the inscrutable Power, at once terrible and beneficent, in whom we live and move and have our being and our end, is to be propitiated by means different from those usually resorted to. The first requisite towards such propitiation is *knowledge*; the second is *action*, shaped and illuminated by that knowledge. Of knowledge we already see the dawn, which will open out by-and-by to perfect day; while the action which is to follow, has its unfailing source and stimulus in the moral and emotional nature of man, — in his desire for present well-being, in his sense of duty, in his compassionate sympathy with the sufferings of his fellow-men." And the drift of all this rather excited eloquence was not merely what is here implied; the true clue is given by a previous passage, in which it is intimated that man ought to seek this all-potent knowledge at the ex-

pense of violence done to almost any kindly sympathy, though not "sympathy with fellow-men." Professor Tyndall had described how the origin and rationale, though *not* the cure, of certain painful diseases had been discovered, partly by the use of the microscope, partly by inoculating certain living creatures with the most terrible of those diseases at various stages; and this triumphant outburst over the results which Professor Tyndall anticipates in his scientific vision, — they are not yet attained, — is meant in great degree to persuade his audience that science must be allowed to be a law unto itself, — excepting, we suppose, it should invade the life of man himself with its experimentation, nor do we see that Professor Tyndall suggests ground for even this limitation, — in endeavoring to ascertain the sources of human suffering, and the remedies or alleviations which may be applied. Leave it alone, he says, — don't reproach it with cruelty because it causes a certain amount of limited suffering, — and "its dawn will open out by-and-by to perfect day." Now, our answer to that is twofold, — first, that it is quite certain that it will not open out to perfect day, but at best to a less dim twilight; and next, that the access of twilight so gained, in ninety-nine cases out of a hundred, instead of leading to action which extinguishes the evil, will only lead to action which will attenuate it to the individual at the expense of the race. That, of course, is no reason at all why this knowledge should not be diligently sought, and sought with all the fervor of Professor Tyndall himself, unless it is sought at the cost of principles and sympathies which are as precious as human life itself, and far more precious than a slight extension of the average term of life to individuals. But the dimness of our knowledge, — the uncertainty whether even our clearest knowledge of ills will suggest any adequate remedy for them, — the absolute certainty that the knowledge which saves and protects the weak does tend to lower the standard of complete health in the future of our race, even while it increases our available resources against individual ailments, should, we think, help to make us acquiesce gladly in every restriction which the healthy moral nature of man imposes on the sources of discovery, and to warn us that far more evil than good may come of the assumption that to the genuine search after knowledge, no means, however revolting to our nature, is forbidden. If we might be permitted to alter

Professor Tyndall's address to the "men of Glasgow" so as to make it suit the impression which his lecture and the discussion to which he refers have made upon ourselves, we should couch it in terms something like these: "Preventible destruction is going on to-day, and it has been permitted to go on for ages, without a whisper of information regarding its cause being vouchsafed to the suffering, sentient world. We have been scourged by invisible thongs, attacked from imperceptible ambuscades, and it is only to-day that the light of science is being let in upon the dominions of our seeming foes. Even now that it is let in, its result is by no means unadulterated good. Destruction prevented, means, too often, weakness transmitted. The invisible thongs which scourged one generation not unfrequently saved the next from the scourges of thongs more frightful still. While the total result for good in human life has been to extend by a few years the average age of man in civilized countries, and to extinguish a good many of the worst spasms of human anguish, that result probably includes quite as much effect in transmitting hereditary feebleness or taints to future generations, as in saving men altogether from the assaults of disease. Let science grow as it will, human life will continue to be hemmed in by all sorts of visible and invisible ills with the totality of which we must never cease to struggle, but with which our struggle is never likely to be, on the whole, much more successful than it now is. What we gain in one way, we shall probably lose in another; as some of our unknown foes are discovered and defeated, the very means which discover and defeat them will make other foes more formidable; and after all, our chief resource will lie in the future, as it does in the present, in the undaunted courage of our fight, the unquailing fortitude of our endurance, and in our firm faith in God here, and a higher life with Him beyond. Considerations like these excite in us the thought that the rule and governance of this universe is not very different from what in our youth we supposed it to be, — that the Power, at once terrible and beneficent, in whom we live and move and have our being and our end, is not to be propitiated by any mere advance of knowledge. The first requisite towards such propitiation is right action in the light we have, — the second, to increase that light wherever we can do so by means which do not lower us in God's eyes and our own. The desire to know, like almost all other desires,

if unbridled, may lead men into actions which would make knowledge sin. It is well, therefore, to realize that even some of the most beneficent results of knowledge have yielded consequences of a double kind, have weakened the winnowing power of physical disease on the human stock, by virtue of the very principle by which they alleviated its assaults. This should teach us that if at any time we have to choose between extending knowledge at the expense of what is noblest in us, and leaving a window closed which we might otherwise open into the secrets of nature, we may be quite safe in preferring the latter course, if only because to violate our moral ideal is a certain and irreparable evil, while the extension of knowledge is at best in comparison but an uncertain good."

From The Academy.

THE SEA OF ANCIENT ICE.

ONE of the very interesting subjects of investigation connected with the discoveries of the Arctic Expedition is that relating to the ancient ice met with north of Robeson Channel, which is similar to that described in Admiral Sherard Osborn's "Discovery of a North-West Passage." We used to call this ancient formation "M'Clure's ice," for want of, a better name, but a special name is much needed to obviate confusion, and to distinguish this ice from ordinary old pack. The name palaeocrystic was adopted by the officers at the time; but for present purposes I will use the expression "the sea of ancient ice." By ancient I mean the ice many years old of the area about to be defined, as distinguished from the old pack-ice met with in any other sea.

It now appears that this sea of ancient ice is of much greater extent than was supposed by Admiral Sherard Osborn. We know that it extends from near the coast of North America to the northwest extremity of Prince Patrick Island, a distance of 420 miles. There is then an unknown gap of about 420 miles from Prince Patrick Island to Aldrich's furthest, which is probably occupied by islands and coast-line. Thirdly, there is the coast-line discovered by Captain Nares, extending over about 300 miles from Aldrich's to Beaumont's furthest. We thus have a line extending from the American coast to Beaumont's furthest, in a north-east and south-west direction, for a distance of

1,140 miles, upon which this ancient ice rests.

The sea of ancient ice was first seen by Captain M'Clure when, on August 19, 1850, the "Investigator" ran into apparently open water off the mouth of the Mackenzie River in a north-eastern direction. But it was soon discovered that they were running into a trap in the main pack, consisting of ice of stupendous thickness, the surface rugged with the frosts and thaws of centuries, and totally unlike any ice ever met with in Baffin's Bay and adjacent seas. They ran up the blind lead in this dangerous ice for ninety miles; but, fortunately, the ship was put about in time, and escaped before the ice closed. There were no two opinions in the ship as to what would have been her fate if the floes had closed upon her.

In August, 1851, the "Investigator" passed along the west coast of Banks Island, and Captain M'Clure again had opportunities of examining the sea of ancient ice. The pack was of the same fearful description as that encountered in the offing of the Mackenzie River, at least eighty feet thick. The surface of the floes resembled rolling hills, some of them 100 feet from base to summit; and the edge of this wonderful oceanic ice rose in places from the water as high as the "Investigator's" lower yards.

Captain Collinson, in the "Enterprise," also passed along the southern flank of the sea of ancient ice, and his description agrees with that of his second in command. In the spring of 1854, when wintering at Camden Bay on the coast of North America, Captain Collinson made an attempt to travel over it with a sledge. He came upon it at a distance of about seven miles from the ship, but he found it to be of such a character as to render all travelling impracticable. His sledge was broken, one of the men fractured his thigh, and he was obliged to return after a few days. McClintock and Mechem found the same ancient ice along the west coast of Prince Patrick Island. Mechem terms this ice "tremendous;" and no one who has travelled elsewhere in the Arctic regions has ever met with similar oceanic ice. Along the coast discovered by Captain Nares the same ice was met with, not as a narrow belt along the shore, but becoming worse and more formidable to seaward, and composing the whole surface of this palaeocrystic sea.

The officers of the "Alert" had longer and better opportunities of carefully examining this most important phenomenon in

physical geography than had ever been afforded to previous explorers, and their observations on this point form not the least valuable part of the results of the expedition. The ice was from eighty to one hundred and fifty feet in thickness, judging from the height of the portion above water; and the surface was rugged in the extreme. Apart from the masses of hummocks thrown up during disruptions, the surfaces of some of these ancient floes were broken into hills and dales, the hills varying from ten to fifty feet in height. This, of course, must be the result of ages of drift, and of alternate frost and thaw. The floes far out to sea were infinitely heavier than those nearer the coast. The formation of this palaeocrystic sea is analogous to the well-known course of formation of glaciers. Year by year layer after layer is added to the upper surface, the lower layers becoming harder, owing to the superincumbent weight, until they are converted into snow-ice. The method of this formation was studied by means of the huge masses, well-termed floe-bergs, which were cast upon the beach. Some of these were split by the frost, offering complete sections, which were carefully drawn. In some instances they showed lines of darker color, at distances of many feet from the existing surface, indicating sections of the pools of water and intermediate rises which, during some far-distant summer, had been on the surface.

Such a sea as this is never navigable, but there was the clearest evidence of frequent, if not annual, disruptions. The vast masses of hummocks, thirty to fifty feet high, and sometimes a quarter of a mile wide, which occur at frequent intervals and divide the ancient floes, are evidence of very violent encounters between the floes; and mud found on the ice some miles from the shore is also a proof of movement. The ice traversed by Captain Markham consisted of ancient floes of small extent and very uneven surface, separated by lofty ranges of rugged hummocks, and there were occasionally narrow streams of this year's ice, that is about five feet four inches thick, connecting the floes. The drift-wood which was found on Prince Patrick and Banks Island, and also on the scene of Captain Nares's discoveries, is likewise a proof that the palaeocrystic sea is subjected to movements the exact nature of which is uncertain; for this drift-wood must have come from the banks of Siberian rivers.

At the same time the periodical disruption is clearly only partial, and the move-

ment of a particular floe is but slight during one season. For there is no sufficient outlet, apparently, for the ice of this sea. The age of the ice is a sufficient proof of this. Sherard Osborn describes the sea of ancient ice as "a vast floating glacier-like mass, surging to and fro in an enclosed area of the Arctic region." It is bounded on the south by the shores of North America; on the east by Banks and Prince Patrick Islands, Grant Land, and the north coast of Greenland; and on the west by Kellett Land and other unknown obstacles north of the Siberian coast; so that it has an area of about one thousand two hundred miles both from south to north, and from east to west. Its movement is slight, and the "Enterprise" and "Investigator" observed that it never moved off from the shore more than a mile or two, and then surged back again. The known outlets to the sea of ancient ice are very narrow. Fragments, forming great ice-streams, pour through Banks Strait into Melville Sound, but they never get west of Griffith Island, and are never seen in Barrow Strait. They appear to fill up McClintock Channel, which can never be navigable. Here Osborn saw them in May, 1851, and he describes the floe as of great antiquity, and as like a heavy cross sea suddenly frozen solid, the height of the solid waves being twenty-five feet. Allen Young reached Osborn's point of observation, and formed the same conclusion. He actually attempted, like Collinson, to travel across this palaeocrystic floe, but found it quite impracticable owing to the rugged nature of the ice.

Thus two explorers had attempted to tackle the ancient ice before the memorable journey of Captain Markham — namely, Sir Richard Collinson and Captain Allen Young, and they can well appreciate Captain Markham's difficulties, and the severity of the struggle he entered upon.

There is another outlet for the sea of ancient ice by Robeson Channel, but it is very narrow, and the ancient and heavy floes do not get much further south than Lincoln's Bay in 82° N. Lat., or thereabouts, according to the season. The "Polaris" did not encounter them; but the "Alert" was at one time actually beset in ancient floes off Cape Lincoln, before rounding Cape Union, and was in great danger. Their size and position in the strait would vary according to the season. Fragments of the ancient ice, no doubt, stream down the south coast of Greenland and round Cape Farewell; and it would be a matter of great interest to explore the

east coast from Cape Bismarck to Beaumont's furthest, in order to ascertain the limit of the sea of ancient ice in that direction, and the causes which obstruct a freer flow of the ice which now, from want of an adequate outlet, continues to grow in thickness and ruggedness.

It was over this sea that Markham and Parr attempted to force their way; and by dint of perseverance they and their gallant followers, in spite of such difficulties as no other advancing sledge-party (except those of Collinson and Allen Young) ever before encountered, achieved a position which will make their journey memorable forever. Considering the character of the ice, the distance they made good was, as Captain Nares truly says, marvellous. They advanced the Union Jack and their own standards to a point north of which no human being has ever put his foot.

CLEMENTS R. MARKHAM.

From The Athenæum.

ERCKMANN-CHATRIAN.

THE singular personage, whom the world knows under the name of Erckmann-Chatrian, is composed of two men, robust, sound in body, and vigorous in mind. They are, neither of them, Alsacians, although they have together created an Alsatian literature.

Emile Erckmann was born four and fifty years ago, in the little Lorraine town of Phalsbourg. To have an exact idea of what Phalsbourg was ten years back, picture to yourself a statue of Marshal Comte de Lobau, round the statue a *place* planted with old trees, round the *place* a row of very modest houses, round the houses a cluster of barracks and casemated magazines, round the barracks a rampart, round the rampart ditches, and round the ditches a plain, high, bare, and dry. An old legend asserts that every house in Phalsbourg has produced, on an average, a sixth of a general, a colonel, two majors, ten captains, and lieutenants in proportion. In short it is a veritable cradle of soldiers, the look of which was dear to my old *chauvinisme*, and which I never saw without pleasure; I lived a long time near it. The little warlike town which the Germans dismantled in 1872 is five English miles from Schlittenbach, that dear house where four of the six children that I have the happiness to possess were born. Everything at Phalsbourg is military, and I once was acquainted with a lawyer, a simple *no-*

taire, who knew the *Annuaire* by heart, and could name all the colonels of all the regiments in France, and tell their depots, and where the regiments were stationed. Such was the singular atmosphere, one may almost call it absolutely unique, in which Emile Erckmann was born. His father, a small bookseller, who combined the selling of a few groceries with his book-selling, was neither rich nor poor. He sent his son to the college, and made him study law.

Chatrian, like Erckmann, is a native of Lorraine, but like him, and like me, alas! he is a native of the annexed portion. His native village is called Soldatenthal, the valley of the soldier, because it was founded, if the legend is to be trusted, by a Swedish soldier settled in France after the Thirty Years' War. The collaborator of Erckmann is a *gentilhomme*, by the same title as MM. Granier de Cassagnac, father and son. He is descended from a family of glass-blowers, and himself blew glass in his youth. But that trade not being to his liking, he preferred to re-enter, as *maitre d'études*, the little college of Phalsbourg, where he had been educated, and there formed his friendship with Erckmann.

Their beginnings in literature were far from successful. In 1848 they started at Strasbourg a republican journal called the *Patriote du Rhin*; and they brought out at the Strasbourg Theatre a grand drama, "*L'Alsace en 1814*," but at the second performance the piece was prohibited by the censorship; and the journal died for want of subscribers. They came to Paris and knocked, without success, at the doors of the publishers. Their first novel, "*Les Brigands des Vosges*," appeared in the *Journal des Faits* of the Abbé Migne, but it was not paid for; and the two friends might have died of starvation had not the one had some little means of his own, and the other a humble occupation. Chatrian earned one thousand five hundred francs in the office of the *Chemin de Fer de l'Est*. As far as I can remember, the first book of theirs that I read was a fantastic tale translated from Erckmann by Chatrian. Some periodicals more or less read, *L'Artiste*, *La Revue de Paris*, *Le Constitutionnel*, opened their columns to them, not without difficulty, and for five or six years they found it much more difficult to get a single novel published than to write two.

Now they are almost rich. The journals compete for the privilege of printing their stories, and Hetzel, an excellent

and honest publisher, sells them by the hundred thousand. However, Chatrian has never left the railway, and has risen to a very honorable post. He is *caissier des titres*, and his salary must be some ten or twelve thousand francs a year. He is married, and has three children. He has a pretty house at Raincy, in the *banlieue*, and he possesses great influence in his neighborhood. It was to him that the brave Colonel Langlois owed his success at the elections of last February.

Erckmann, who is not married, is an exile, without near relations. He had a grand-niece at Strasbourg, who has married a German. Broken down by this sorrow, he wandered for a long time on the borders of our dear native land, the door of which is shut to him as to so many others. Before the war he had settled in the pretty valley of the Zinsel, to live after the fashion of the *Ami Fritz*. He is the best liver in the world; he adores the good wine of Alsace, sauerkraut, ham, the crayfish of the Zorn, the beer of Strasbourg, and he gladly loses himself in the clouds that rise from his pipe. What he loves, perhaps, still better, is shooting in the woods, long expeditions in the mountains, and discussions without end with a small group of friends. A most worthy man, in truth, this Erckmann, and a droll fellow, too. He had decayed teeth, which gave him pain from time to time. So he had them all taken out at one sitting, and now with a set of gums, as fresh and rosy as an infant of six months old, he munches the most solid of food and the softest of crusts. With his cheeks a little hollow, his fat chin, his long moustaches, and his bourgeois country dress, he looks like a colonel on half pay. After having long wandered like a tormented spirit near the lost paradise of Alsace-Lorraine, he has settled in the neighborhood of Saint Dié, in the Vosges, with worthy friends who are connections of his. I went to see him there two years ago, and mechanically, in spite of ourselves, across the mountain paths we penetrated into Alsace.

I learned on this occasion the secret of his joint work with the good Chatrian. The two friends see one another very rarely, whether at Paris or in the Vosges. When they do meet, they elaborate together the scheme of a work. Then Erckmann writes it, Chatrian corrects it, and sometimes puts it into the fire. I can quote as an example, a certain story conceived in an anti-clerical spirit, and intended for the *XIXme Siècle*. Erckmann

is at this moment writing it for the third time. We have few writers so conscientious, and I do not suppose that you have many. We have none more sincere, more upright, more humane, more zealous in defending the true against the untrue, right against might. We have no better patriots, if patriotism consists in denouncing the follies of ambition, decrying false glory, not seeking a quarrel with any one, but wishing that a people unjustly invaded should defend itself to the last. Such is the meaning and morality of all these national tales which the authors of our ruin denounce to the public with signal hypocrisy.

EDMOND ABOUT.

From The Liberal Review.
ON THE SHELF.

MEN often pray that they may live to what they call a good old age. Yet it is to be feared that a great portion of humanity never appears to so little advantage as it does in the evening of life. Nor is this to be wondered at. People's dispositions depend largely upon the state of their constitutions. If a man is strong and robust, there is small credit due to him for being cheery and sweet-tempered. On the other hand, if a man is troubled with many aches and pains there is little blame owing to him if he is discontented and querulous. Now, there can be no doubt that a large number of old people are discontented and querulous, and it is equally clear that their failings have their origin in the frailties of their flesh and blood rather than any serious defect in their mental composition. At the same time it must also be said that in addition to their physical weaknesses and the contemplation of their failing powers old people have much to aggravate them. In the first place, the young are apt to display no consideration for their feelings. Many young men assume that old men have had their day and that it is time for them to make way for those who are pressing on their heels. If the old men can be thrust aside, well and good; if they decline to be removed from their places before death takes them, the chances are that they are regarded as nuisances, and their transmutation is spoken of as a thing to be desired. Indeed, it often happens that they are shown that it is difficult to tolerate their presence, and that the same would not be tolerated if it were not for

the fact that blood is thicker than water. At many a fireside does the old grandfather sit, a sort of chilling influence on the gay striplings who have life before them, and can barely be patient with the poor old man who has left life behind him. Who cares to talk with him? Who sympathizes with his hopes and aspirations? Hopes and aspirations, forsooth! What business has he with such things? At any rate, it is supposed that he ought not to have any which pertain immediately to this world, though, after all, this world, wicked though it is, is the world in which the loves and joys of most of us are wrapped up. Whatever property he possesses it is felt that he is in duty bound to give to some one else, and very few of those who have constituted themselves his *protégés* feel any compunction in attempting to wheedle whatever they can from him. He has the sense to perceive all this. He has the discrimination to detect that he is laughed at, sneered at, regarded as a being of the past, put upon one side as if he were nothing, petted as if he were a child or a person of weak intellect, and in other ways, possibly unintentionally, mortified and insulted. Can it be wondered at that he often makes peevish attempts to resent the treatment which he receives; that he is induced to take misanthropical views of life and his condition? Verily a man must have a wonderful mental and physical constitution if he can remain cheerful, hearty, frank, and good-natured during the period in which he awaits the writing of finis to the chapter of his life. Some manage to do this, of course; but they are brave souls, who are largely favored by exceptional circumstances.

It must be remembered that age naturally expects to receive a certain amount of deference from youth. We are sorry to have to say that it does not always even command respect. A young man is inclined to be particularly resentful when he sees a would-be rival in the shape of an old man, and he is apt to indicate his resentment in unpleasant ways. He seems unable to see that he ought gracefully to allow his elders to take the initiative except when his own abilities are of an undeniably superior order. Indeed, he does not hesitate to regard that weight which is occasionally permitted to attach to age as a personal affront to himself, as a grievance which he is bound to fight against

with all the bitterness of his nature. It may be that age is disposed to monopolize certain privileges and to presume upon its rights, but every excuse can be made for this by reasonable minds. It would be strange if an old man did not display irritation when he sees youngsters whose heads he has patted when they have been children, whom he has, perhaps, nursed upon his knee, acting flippantly and arrogantly towards him. It would be still more singular if he failed to feel dismayed when he perceives one, whom he has considered barely worth his notice, suddenly rushing to the front and making the running at a tremendous pace. He could, perhaps, bear with equanimity being beaten by a person who has been buffeted about by time like he himself has, but the case is almost intolerable when he suffers defeat and has the bread taken out of his mouth by an individual who is just entering upon the serious business of life. Old men are displaced daily by youthful rivals. At any time you may hear their murmurs and perceive their unhappy condition. They have not the philosophy to accept their discomfiture as one which has been decreed by fate, and they have not the strength to grasp the prizes which lie before them and are secured by bolder hands than theirs. So they fall back, in their trouble, upon the stale device of abusing youth, of expressing contempt for youth's works, and railing against society for its patronage and toleration of youngsters. As they are being put upon the shelf they derive such solace as they can from pouring into compassionate ears the story of their wrongs; a proceeding which often excites as much contempt as pity.

Youth may learn one lesson from all this. It should see that it must make its position before it gets old if it wishes to retain respect. It should perceive that age to be happy needs an established status, and that if it has not laurels to repose upon it will meet with scanty consideration. The despised senility of dotage is simply the apotheosis of a life of failure. It will ever be so; and, however much lovers of the traditional past may bewail the fact, age will not command respect on account of its white hairs and tottering limbs. Indeed, we fear that white hairs and tottering limbs, when they are all that an old man has to rely upon, will mostly excite contempt and give rise to an opinion that he is cumbering the earth too long.